THE BULLETIN

North Dakota State School of Science

A Vocational School

ANNUAL CATALOGUE
1918
WAHPETON, NORTH DAKOTA

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APRIL, 1918 VOL. XI, NO. 1

CALENDAR

—1918—

June 14—Annual Commencement.
Sept. 24—Fall Term Registration.
Sept. 25—Fall Term Begins.
Nov. 27—Fall Term Ends.
Dec. 3—Winter Term Registration.
Dec. 4—Winter Term Begins.
Dec. 22—Christmas Vacation Begins.

—1919—

Jan. 7—Winter Term Resumes.
Mar. 22—Winter Term Ends.
Mar. 25—Spring Term Registration.
Mar. 26—Spring Term Begins.
June 14—Annual Commencement.

In order that a full school term may be included in these dates, it is necessary that school be taught six days each during the four weeks beginning Sept. 30, Oct. 7, 15, 22.

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Secretary of the Institution

ERNEST BRUNNER
Wood Shop

CHARLES ZILLGITT
Automobile and Forge Shop

M. C. OSMAN
Superintendent of Buildings and Grounds

*Resigned.
**Last half of year.

General Information

LOCATION

The School of Science is located in the southeastern part of the state of North Dakota, in the city of Wahpeton, the county seat of Richland county.

Wahpeton is famed for its shady streets, its beautiful homes, and its excellent school system. It is easily accessible by means of four great railway systems which form a net work over the entire state.

The new filtering plant installed during the past winter supplies an abundance of pure water, and with the newly constructed sewer system, makes Wahpeton one of the most healthful cities of the state, and an ideal location for an institution of learning.

HISTORY

The Convention which framed the constitution for North Dakota located the State School of Science at Wahpeton, and endowed it with 40,000 acres of the Congressional grant of public lands for institutions of higher learning in the new state.

The legislative act providing for the new school was approved March 10, 1903, and the institution was opened in the following September. The work of the first two years was carried on in rented rooms, but in June, 1905, the trustees purchased the building and property of the Red River Valley University.

OBJECT

The NORTH DAKOTA STATE SCHOOL OF SCIENCE is a vocational institution. Its purpose is to serve the masses of young people by offering such courses as will fit them for success on the farm, in the home, in business, in the office, in the shop, and such other vocations and industries as will be demanded from time to time. It is an institution where

boys and girls may secure an education which will fit them to solve the problems of life and become efficient citizens. Its courses are offered for the purpose of extending and improving vocational and industrial education, as a means of opening better and wider opportunities of service to young men and young women. The purpose as defined by statute is "to furnish such instruction in the pure and applied sciences, mathematics, languages, political sciences and history as is usually given in schools of technology below the junior year, the chief object being the training of skilled workmen in the most practical phases of applied science."

During the past year the board of regents have published the report of the survey commission, and have in general recommended, that the purpose of the school is to furnish a strong mechanic and commercial trades school, offering practical courses in industrial arts and commercial branches.

This statement of its purpose conveys an accurate idea of the work done in the institution and conforms to the line of development which has been taking place in the institution for the past five years.

"The state cannot continue to spend vast sums on high schools and universities and neglect vocational training without repudiating the reasons usually given for maintaining schools of any sort as a public charge. Self-preservation by training future citizens is the justification of the state for spending money on schools. We have come to a point where the state must enter the field of vocational education, and thus give equal opportunity to artisan, farmer, merchant and professional man. Justice to the individual and the welfare of the state both demand this course."

"One of the fundamental principles underlying a public school system is that it shall offer equal opportunities for all. The American public school system boasts of this as one of its characteristic merits. An examination of the facts shows the claim to be unfounded. The opportunities are equal in the sense that all classes may freely partake of the common training given in the elementary school. Beyond that, there is no longer even a pretense of maintaining equality of opportunity. For the fortunate few whose ambition and economic condition impel them to prepare for a profession, the state has opened high schools leading to colleges and professional schools. Colleges are often free to this class of students. Teachers are everywhere trained in tax supported institutions." But the average boy or girl, who desires an edu-

cation which will train him or her for a life work, is not so fortunate. "In short, the few receive preparation for life's duties at public expense (generally the more favored who can well afford to pay all expenses); the many are turned out of the schools without such preparation."

"Equal opportunity for all does not necessarily mean the same form of education for all." "But a choice of courses at the end of the sixth year, free to all alike, is not a denial of educational opportunity. On the contrary it is creating a diversity of opportunity, whereby different types and degrees of talent may find fitting modes of expression and development, instead of being confined to a single form of training."

It is the desire of this institution to offer the masses of young people a school of education, democratic not only in name but in reality; a school where they will receive an educational training which will fit them for some particular vocation or industry; a school which will have for its purpose the extension and improvement of vocational and industrial education as a means of opening better, wider and earlier opportunities of service; a school where all the young people will have equal opportunities for securing an educational training.

With this interpretation in view the courses are developed for the purpose of extending and improving vocational and industrial education, as a means of opening better and wider opportunities of service to young men and young women. At the same time the cultural courses of the academic departments provide for a liberal training and general development of the mind and character of the students. The aim is to furnish such information and training as can be immediately applied to the various vocations and industries.

The following classification briefly suggests the classes of young people, whom the Science School desires to serve. They are arranged according to the amount of preparation and the kind of work desired by the student:

1. Students who are fifteen years of age, who have no definite educational preparation, and yet feel the need of further vocational or industrial training.

2. Students who have finished the sixth grade or more in the rural schools and who, though bright yet outclassed in age, desire to prepare for courses requiring an eighth grade preparation or for some vocational course.

3. Students who have graduated from the eighth grade and desire to immediately take a vocational course.

4. Students who have graduated from the eighth grade and desire vocational guidance and cultural courses.

5. Students who have graduated from high school and desire to immediately learn a trade or vocation.

6. Students who have graduated from high school and desire vocational training along with the higher cultural courses.

7. Students who have graduated from college and desire only the special technical training in a trade or vocational course.

The school can offer only a limited number of courses at present and has therefore outlined them to meet the more immediate needs of the greatest number of North Dakota's young men and women. For the purpose of convenience they are arranged under the following departments.

Agriculture.
Business and Commerce.
Home Economics.
Industrial Arts.
Industrial Engineering.
Special Winter Term Courses.
Trade Courses.
Elementary Vocational Courses.

CAMPUS AND BUILDINGS

The school now owns about twenty-five acres within the city limits for its campus and grounds. With its quadrangle bordered by buildings and its shade trees and walks the campus has become one of the beauty spots of the region.

The Administration Building is an imposing structure of red brick, four stories in height. It contains the offices, the library, the laboratories for physics, biology and electrical engineering, and a large number of recitation rooms.

The Mechanics Building is a one-story structure of cement blocks. It contains the forge, machine and wood shops, the steam engineering laboratory and the engine room.

The Chemistry Building is built of Hebron brick, and is devoted entirely to the work in chemistry, offering abundant laboratory space and a well-equipped recitation room.

Burch Hall is a commodious building 114x44 feet, built of Hebron brick, three stories high above a well lighted basement. In this building are located the general dining hall and kitchen for the school. The Domestic Science department has excellent accommodations on the first floor, and the upper floors accommodate about sixty girls with dormitory rooms and parlors.

The Power House provides heating facilities for all the buildings and power for the engines in the steam engineering laboratory.

The Gymnasium is a large and commodious structure of Hebron brick. Its main room provides seating capacity for the largest school gatherings. It provides for all the needs of the athletic teams, and affords opportunity for physical culture for all the students.

ADMISSION

All candidates for admission, fifteen years of age or older, are eligible to enter any of the courses in this institution, providing they have had an education equivalent to that mentioned as the requirement for the specific course which they wish to enter and are capable of doing the work required. Thus any student may enter the institution by presenting suitable credentials, or by satisfying the President by examination or otherwise that he is prepared to enter upon the work of the course with profit to himself and credit to the institution.

Students may enter at any time, provided they are prepared to join classes already established. It is, however, very strongly urged that all work should be begun promptly at the beginning of the term. Those who enter late lose much that cannot be regained. The arrangement of terms makes it possible for winter term students to enter as soon as the fall's work is finished and continue until spring, thus enabling them to complete the special courses in one, two or three winter terms.

Special students may be admitted to the classes for which they are prepared. They are subject to the same rules as the regular students and, unless excused by the faculty, are required to take studies enough to occupy all their time.

A certificate of good moral character must be presented by the student.

FEES

Matriculation Fee. A fee of $5.00 per term is charged all students.

Late Registration. Those students who register late, except those entering for the first time, will be charged $1.00 additional.

Deposit. A deposit of $5.00 as a guarantee against loss or damage to the room or its contents is required of each student rooming in the dormitories.

Commercial Fees. The separate fees in the courses of this department are as follows for each term: Bookkeeping or Stenography, $5.00; Typewriting, Penmanship, each $1.00; Rent of extra typewriter, $1.00; Telegraphy, $5.00.

Domestic Science Fees. The students in cooking classes pay a fee of $1.50 for the fall or spring term, and $3.50 for the winter term. The fee for model sewing is 50 cents, for millinery 50 cents, for dietetics, $1.50, and for short course cooking, $5.00. The snow system is required in sewing, and a uniform is required for this department, prescriptions of which will be found under the description of the courses.

Electrical Engineering Fees. The student in electrical engineering is charged a laboratory fee of $1.00 per term.

Laboratory Fees. In chemistry the student pays for material consumed, and a deposit of $3.00 is required, and the unused portion of the deposit fee is returned at the close of the course.

In agriculture a fee of $1.00 is charged per term.

In general science a fee of 75c is charged per term.

In preparatory physics or biology a fee of 75c, and in college physics or biology a fee of $1.50 per term is charged.

Shop Fees. To cover the cost of materials used, a fee of $2.00 per term for wood, forge or machine shop. For the Automobile or the Steam and Gas Tractor Courses a fee of $3.00 per term is charged.

Surveying. A fee of $2.00 is charged in this course.

All fees must be paid in advance at the time of registration.

Students who voluntarily drop a subject after two weeks are not entitled to a return of fees. Otherwise one-half the amount is returned.

DISCIPLINE AND ATTENDANCE

Students are expected at all times and in all places to conform to the usages of good society.

Repeated offenses will result in suspension or expulsion.

It is required that the regular school work shall take precedence over all other matters and students negligent in work or conduct are liable to loss of privileges and standing.

Students are required to be regular and punctual in attendance. A complete record is kept of each student, showing his attendance, application, progress in studies and general deportment. A copy of this report is sent to parents or guardian each month, if requested.

ATHLETIC WORK

The new gymnasium, built in 1911-12, is equipped with up-to-date apparatus. The main floor, with dimensions of 100x60 ft. is one of the best in the state. Separate locker rooms and showers for boys and girls occupy the first floor together with a wrestling and boxing room. Besides being available for physical training work, the gymnasium is used for basketball, handball, indoor base ball and other indoor games.

Gymnasium work is required of all students attending school unless excused by the President. Credit is given for the work. Classes for boys are held on alternating days, twice a week and also for girls twice a week. Each girl should be provided with a middy blouse, bloomers and gymnasium shoes.

A director of athletics has general supervision of all athletic interests. A fine athletic field provides facilities for baseball, football and track events. The Science School is a member of the Inter-State Conference and also an associate member of the Minnesota-Dakota Conference. Contests in all sports are carried on with Fargo College, the Agricultural College, the University of North Dakota, and the Normal schools of the State.

HYGIENE LECTURES

Lectures in Personal Hygiene for girls will be given on Saturday of each week during the school year at Assembly period. All girls in school must attend these lectures.

A series of three or four lectures in Personal Hygiene for boys will be given during the first weeks of the fall term, and will be repeated during the winter term for the new students. All boys are required to attend these lectures.

BOARD AND ROOMS

The school furnishes board and room to about 100 students.

Each student upon entering the dormitory must show a satisfactory vaccination scar or be vaccinated. A deposit of $5.00 is required from each student as a guarantee against loss or

damage to the room or its contents. Table board will cost not less than $3.75 per week and room rent 50c per week, both payable one month in advance, otherwise ten per cent additional charge is made. No deduction is made for absence of less than a full week.

The rooms are heated by steam and lighted by electricity, and are furnished with usual bedroom furniture. The student is required to furnish bed clothing, pillow and towels, and should bring any desired additional room decoration. Students rooming in the dormitory must take full work.

A laundry in the basement of Burch Hall affords the girls an opportunity to do their own laundry work, by the payment of a fee of 20 cents each for the fall and spring terms and 40 cents for the winter term.

STUDENT ORGANIZATIONS

Literary Society. This society aims to give all of the students opportunities for work in public speaking and debating. Several farces and short plays are given each year in the "Triple-S Theatre." All students are members of the Literary Society.

Athletic Association. All bona fide students are members of the athletic association. Its object is to promote all legitimate athletic interests of the institution. Athletic affairs are under the supervision of a board of control elected by the faculty, consisting of one member from the faculty and two members from the student body.

The school is a member of the Dakota-Minnesota Athletic Conference, and also of the Interstate Normal School Conference. These conferences maintain championship contests in which the State School of Science has always taken an active part.

Oratorical Association. This association is a most efficient means for the development of the art of public speaking and debate.

Y. W. C. A. The young women of the school maintain a strong association which fosters and encourages the spiritual and social life of its members.

Religious meetings are held on alternate Wednesdays at 4:20 P. M., the other Wednesdays being devoted to sewing for the Red Cross and charitable work. Numerous social functions in the nature of receptions, teas, and picnics are given during the year. The organization maintains a Student Employment Bureau through which students wishing to earn small sums

by doing work outside of school hours are afforded the opportunity.

The Band. The school offers instruction and training in band, orchestra, quartet and chorus. The band is an organization which has been continuous since the school was established and which has grown year by year in a very marked degree, until at the present time the organization has forty members and the number is not allowed to fall much below that figure. The first band is supplemented and fed by a second band which is made up of the less advanced students, and, which rehearses during the winter term only. Each year a number of standard overtures and selections are studied and worked up to a good degree of perfection. The band appears at many of the important school functions, such as athletic games, institutes, theatricals and the like. From time to time the concerts are given in neighboring cities, while in the Spring Term a whole series of open air concerts are given in the cities of Wahpeton and Breckenridge. All students are eligible to the band organization and have access to the equipment.

The orchestra is made up of especially talented students who are interested in this kind of music. The number varies from eight to twelve. This organization furnishes the music for the chapel exercises and at all other functions where orchestra music is suitable.

In the fall of each year a vocal quartet and a choral club are organized. All students who have any desire to sing are urged to join them. As a result the organization is growing rapidly in both numbers and popularity. At first easy songs are studied and then as progress is made more difficult numbers are attempted. This organization forms the nucleus for all assembly singing. From its numbers are picked the girl's quartet and sextette, the boy's quartet, and mixed double quartets.

Credit given for playing in the first band.

No fee is charged those playing in the first band.

PRIZES

Oratorical Prizes. To the students obtaining first and second places in the local oratorical contest, gold and silver medals are awarded. The successful contestant represents the school in the state oratorical contest.

Prize in Declamation. A prize is awarded to the student in the preparatory department who wins first place in the declamation contest held during commencement week.

LIBRARY

The general library is open on school days from 8:00 to 12:20 and from 1:30 to 4:30, for a reading and study room. The books are classified according to the Dewey Decimal system of classification and are indexed in the card catalogue of printed cards from the Library of Congress. An extensive list of current periodicals is provided. Two departmental collections may be found in the Chemistry and Home Economics departments.

GENERAL ASSEMBLY

On Wednesday at 11:45 o'clock all students are expected to assemble. At this time announcements of general interest are made and it is intended that there shall be a speaker present who will address the student body upon some topic of interest.

RHETORICALS

In lieu of membership in a literary society the right is reserved to require rhetorical exercises consisting of readings, essays, debates, speeches and demonstrations each alternate week, under the direction of the members of the faculty. Every student in whatever course enrolled is expected to be present and take such part in these exercises as may be assigned by the teacher in charge.

LECTURE COURSE

A strong lecture course was given during the winter of 1916-17. It was greatly appreciated by the student body, and a course consisting of several high grade numbers is being arranged for the winter of 1918-19.

Students in the school are admitted to the entire course on tickets issued from the office. The entertainments and lectures constitute a valuable part of the intellectual and social life of the institution.

EXTENSION WORK

The purpose of the State School of Science is to serve the people in all the ways within its power. While its class room

privileges can be enjoyed only by those in attendance at the school, there are many ways in which the school can cooperate with the other educational and social agencies of the people. One of these means of widening the influence of the school beyond its campus is found in extension work.

At present the school does not solicit students for correspondence study courses. However, the members of its Faculty are prepared to meet the people of any community for an evening to be devoted to a lecture, demonstrations, or instruction, either in single lectures or in a series of several lectures in a course.

Some communities maintain a literary society, a young people's circle, a reading circle, or debating league which would welcome the opportunity of hearing a specialist on a subject of general interest. Where no such organization already exists the school house or public hall could be used as a rallying place for the citizens to meet for an evening of entertainment and instruction.

Correspondence is invited relative to the methods and plans for organizing for lecture courses or literary evenings. The expense of a single lecture or entertainment, or a course, may be learned by addressing Pres. F. E. Smith, Wahpeton, N. D. The expense will never be more than the actual expenses of the lecturer or group.

SPECIAL BULLETINS

Special bulletins more fully describing the courses in elementary agriculture, business and shorthand; domestic science; mechanical and electrical engineering; trades and vocational courses; short winter term courses and the Summer School, have been published and may be obtained by applying to the President.

VISITORS WELCOME

We are always glad to have the parents and friends of our students visit the school while in session. We take pleasure in explaining our methods and showing the work of our students.

Courses

The courses are outlined and classified as requiring a sixth grade, eighth grade and high school preparation. This is merely a matter of convenience in classification, since the majority of the students who wish to enter these courses will be graduates of one of the other of these grades. However, it is not necessary that the student shall have completed any particular outline or course of subjects, providing he has the ability necessary to do the work required in the course which he wishes to enter.

The vocational courses are organized as follows:

	Preparation Required
Agriculture:	
Three Year Course	8th Grade Graduate
One Year Course	6th Grade Graduate
Three Winter Term	6th Grade Graduate
Business and Commerce:	
Two Year Commercial	8th Grade Graduate
One Year Bookkeeping (Elective)	8th Grade Graduate
One Year Stenography (Elective)	8th Grade Graduate
One Year Telegraphy (Elective)	8th Grade Graduate
Home Economics:	
Institutional Administration	6th Grade Graduate
Dressmaking Trade	6th Grade Graduate
Homemaker's Course	8th Grade Graduate
Homemaker's Short Course	6th Grade Graduate
Teacher's Foundation Course	8th Grade Graduate
Industrial Engineering:	
Building Construction	Two Years of High School Work
Drafting Course	Two Years of High School Work
Electrical Construction and Equipment	Two Years of High School Work
Three Years General Engineering	Two Years of High School Work

Special Short Courses:

Three Winter Term Agriculture .....6th Grade Graduate
Homemakers Short Course .....6th Grade Graduate
Three Winter Term Electrical .....6th Grade Graduate
Three Winter Term Steam and Gas Tractor Course .....6th Grade Graduate
Three Winter Term Automobile Course .....6th Grade Graduate
One Winter Term Gas Tractor Course ..6th Grade Graduate
One Winter Term Automobile Course ....6th Grade Graduate

Teacher Training Courses:

Secondary Rural .....8th Grade Graduate
Home Economic Foundation .....High School Graduate
Two Year College .....High School Graduate

Trade Courses:

Cabinet Making .....8th Grade Graduate
Carpentry and Building .....8th Grade Graduate
Bricklaying and Plastering .....8th Grade Graduate
Draftsmen's .....8th Grade Graduate
Plumbing and Steam Fitting .....8th Grade Graduate
Practical Electrician .....8th Grade Graduate

Elementary Vocational Courses.

Two Year Junior College Courses in General Arts and General Science.

Elective Two Year Pre-Engineering, Pre-Law and Pre-Medical Courses.

General Secondary Course—A General High School Course and four elective courses in Agriculture, Commerce, Home Economics, and Manual Arts.

For Sixth Grade Graduates (Preparatory for H. S. or Vocational Course).

*All students fifteen years of age or older are admitted to any of the courses in this institution, providing they have had an education equivalent to that mentioned as the requirement for any specific course, and are capable of carrying on the work with profit to themselves and credit to the institution.

At the request of five or more students the school will gladly offer whatever vocational courses are desired within reasonable limits.

The President will gladly correspond with prospective students concerning courses similar to those outlined, but not yet offered or outlined in the catalog.

*See paragraph at top of page 18.

Synopsis of Courses

Numbers in parenthesis refer to the number of the descriptive paragraph of the course. See descriptions of courses, pages 44 to 97.

Numbers not in parenthesis refer to the number of periods given to the subject per week. A period is 45 minutes long. Two laboratory periods are equal in credit to one recitation period.

AGRICULTURE

The department of Agriculture was organized in 1910 with the view of providing practical industrial agricultural training for the young men of the state who are prohibited from attaining a regular high school course, followed by a four years collegiate training in agriculture. The courses aim to meet the demand for such information and skill in agricultural training as can be immediately applied to farm life and yet not entirely exclude the more broadening and cultural lines of work that have general educational value and fit for efficient citizenship.

It is supposed that most of the students taking the Agricultural courses will return to the farm, and that they have come to school for the purpose of widening their education to meet the needs of an industrious and intelligent citizenship in a rural community. It is the object of the Three Year Course to meet this purpose and at the same time give the student an opportunity to gain some specific information and knowledge regarding the everyday practical problems of the farm and the fundamental and scientific principles of Agriculture. The One Year Course and the Three Winter Term Course are intended primarily for farm boys and young men who cannot spend enough time at school for a full course, but who are desirous of obtaining the greatest amount of practical training possible in a short time.

Students taking a Course other than the Agricultural, but who desire to have some work in Agriculture, can choose Agricultural subjects as electives in connection with their regular course.

THE THREE YEAR COURSE

To successfully pursue this course students should have completed the eighth grade or have had sufficient training to enable them to successfully carry on work ordinarily demanded of high school students.

First Year

FALL TERM	WINTER TERM	SPRING TERM
English (143) 5	English (143) 5	English (143) 5
Mathematics (169).... 5	Mathematics (169).. 5	Mathematics (169).. 5
General Science (11) 5	Gen. Science (11).... 5	Gen. Science (11).... 5
Shop (201) 10	Shop (201) 10	Shop (201) 10
Drawing (91) 10	Drawing (92) 10	Drawing (92) 10

Second Year

English (144) 5	English (144) 5	English (144) 5
Indus. Hist. (155).. 5	Agric. Arith. (172).. 5	Farm Account (51).. 5
Zoology (12) 5	Physiology (13)..... 5	Botany (14) 5
Elem. Chem. (31).. 5	Elem. Chem. (31).. 5	Elem. Chem. (31).. 5
Shop (203) 10	Shop (202) 10	Shop (206) 10
		Elective 5

Third Year

Physics (191) 5	Physics (192) 5	Physics (193) 5
Agriculture (1) 5	Agriculture (2) 5	Agriculture (3) 5
Mech. Eng. (131) ..10	Mech. Eng. (133)....10	Mech. Eng. (136) 5
Shop (204) 10	Shop (204) 10	Shop (204) 10
Mech. Eng. (136) 5	Elective 5	Elective 5

ONE YEAR COURSE

Students taking this course should have a common school education. However, mature students and others who for various reasons were unable to complete the seventh and eighth grades can succeed with the Course if they apply themselves diligently. The work begins in September and lasts throughout the year.

FALL TERM	WINTER TERM	SPRING TERM
Indus. Hist. (155).. 5	Agric. Arith. (172).. 5	Farm Acct. (51) 5
Agriculture (1)..... 5	Agriculture (2) 5	Agriculture (3) 5
Gen. Science (11).... 5	Gen. Science (11) .. 5	Gen. Science (11) 5
Shop (204) 10	Shop (204) 10	Mech. Eng. (136)..10
Elective 10	Shop (202) 10	Elective 10

Students not having had satisfactory preparation in English will be required to elect English (141). Others may elect any courses in which they are especially interested.

THREE WINTER TERM COURSE

The Three Winter Term Course is similar to the One Year Course, but is arranged for young men who for various reasons are unable to attend school during the regular school

year. It is so arranged that students can enroll at the beginning of any winter term and by attending three successive winter terms complete the course. Work begins December 4, 1917, and ends March 23, 1918.

FIRST WINTER	SECOND WINTER	THIRD WINTER
English (142) 5	Agric. Arith. (172).. 5	Farm Acct. (51) 5
Agriculture (1) 5	Agriculture (2) 5	Agriculture (3) 5
Physiology (13)..... 5	Shop (204) 10	Shop (202) 10
Mech. Eng. (133)....10	Shop (213) 10	Shop (204) 10
Drawing (91) 10	Drawing (92) 10	Drawing (92) 10

COMMERCIAL AND BUSINESS COURSES

The aim of the Commercial Department is to give young men and young women a fundamental training for the activities of business. It is necessary that the business man should have a broad preliminary training in business. Those entering business at the present time have a much less chance of learning business principles than was possible ten or fifteen years ago.

TWO YEAR COMMERCIAL COURSE

First Year

FALL TERM	WINTER TERM	SPRING TERM
Business English(142)5	Com. Law (50) 5	Banking (53) 5
Spelling (48) 4	Spelling (48) 4	Spelling (48) 5
Penmanship (45) 5	Penmanship (45)..... 5	Penmanship (45) 5
Bookkeeping (41) 15	Bookkeeping (41) 15	Book. and Act. Bus. (41) 15
Rapid Cal. (44) 2	Rapid Cal. (44)..... 2	Rapid Cal. (44) 2

Second Year

Penmanship (45.5) .. 5	Penmanship (45.5) .. 5	Penmanship (45.5) .. 5
Stenography (46) 15	Stenography (46) 15	Stenography (46) 15
Spelling (49) 4	Spelling (49) 4	Spelling (49) 4
Telegraphy (52) 5	Telegraphy (52) 5	Telegraphy (52) 5

Note: Those wishing only one year of commercial work may select a course of one year having either bookkeeping or shorthand as the major from the above two year course.

HOME ECONOMIC COURSES

In the Home Economics Department the following courses are offered. Dressmaking Trade Course, Institutional Administration Course, the Homemakers' Course, the Homemakers' Short Course and the Teacher's Foundation Course.

INSTITUTIONAL ADMINISTRATION

The prominence of industrial education today is due to the widespread feeling that the time has come to extend the facili-

ties for education to meet the needs of those, who are not now receiving from our schools the kind of training that fits them for efficiency in life. It is highly essential that girls, as well as boys, are given a training which will enable them to earn their own livelihood, or a livelihood for those who are dependent upon them.

In this state there is a very great demand for good cafeterias, lunch-rooms and tea rooms. There is an excellent opportunity for young women with training to establish these institutions and to be successful financially. There is also a call for managers of cafeterias, lunch rooms and tea rooms. With this in mind a course in Institutional Administration has been planned. This course aims to give young women the ability to manage such institutions efficiently.

FALL TERM		WINTER TERM		SPRING TERM	
Ins. Cook. (61)	25	Ins. Cook. (61)	25	Ins. Cook. (61)	25
Ins. Manag't. (62)	2	Ins. Manag't. (62)	2	Ins. Manag't. (62)	2
Bus. Admin. (80)	3	Bus. Admin. (80)	3	Bus. Admin. (80)	3
English (143)	5	English (143)	5	English (143)	5
Mathematics (169)	5	Mathematics (169)	5	Mathematics (169)	5

DRESSMAKING TRADE

There is a great demand for skilled dressmakers, due to the high cost of ready-to-wear garments and also to the difficulty of purchasing them in some localities. A course in the Dressmaking Trade is offered, which aims to fill this need. Any girl who satisfactorily completes this course will be able to obtain steady employment at high wages.

First Year

FALL TERM		WINTER TERM		SPRING TERM	
Elem. Sewing (63)	25	Garment Making (63)	25	Garment Making (63)	25
Textiles (64)	2	Textiles (64)	2	Textiles (64)	2
English (143)	5	English (143)	5	English (143)	5
Mathematics (169)	5	Mathematics (169)	5	Mathematics (169)	5

Second Year

Advanced Dressmaking (65)	20	Trade Work (65)	20	Trade Work (65)	20
Costume Design (66)	4	Costume Design (66)	4	Costume Design (66)	4
English (144)	5	English (144)	5	English (144)	5
Millinery (67)	6	Art Need'w'k. (68)	6	Millinery (67)	6

HOMEMAKERS' COURSE

This course is planned to meet the demand of any girl who may desire to better equip herself for the responsibilities of home life. Girls who have had some high school training,

but who do not hold high school diplomas, and girls who have only a rural school education may take this work. Its purpose is to secure practical efficiency in regard to the proper administration of the affairs in the home.

First Year

FALL TERM	WINTER TERM	SPRING TERM
Plain Sewing (69)..20	Plain Sewing (69)..10	Plain Sewing (69)....10
Elem. Cooking (71) 6	Elem. Cooking (71) 6	Elem. Cooking (71) 6
Millinery (67) 4	Art Need'w'k. (68) 4	Millinery (67) 4
English (143) 5	English (143) 5	English (143) 5
Mathematics (169) .. 5	Mathematics (169) .. 5	Mathematics (169).. 5
		Hygiene (77) 5

Second Year

Dressmaking (70) 10	Dressmaking (70) ..10	Dressmaking (70) ..10
Ad. Cooking (72) 6	Ad. Cooking (72) .. 6	Ad. Cooking (72) 6
Food Study (73) 5	Food Study (73) and Household Management (75) 5	House. Mangt. (75) 5
Textiles (64) 2	Textiles (64) 2	Textiles (64) 2
Home Nurs. (76) 5	Dietetics (74) 5	Dietetics (74) 5

TEACHER'S FOUNDATION COURSE

The entrance requirement for this course is a four year high school course or its equivalent.

First Year

FALL TERM	WINTER TERM	SPRING TERM
Plain Sewing (67, 69) 5	Plain Sewing (67, 69) 5	Plain Sewing(67, 69) 5
Elem. Cooking (71).. 5	Elem. Cooking (71).. 5	Elem. Cooking (71).. 5
Food Study (73) 5	Food Study (73) and Physiology(22) 5	Physiology (22) 5
Psychology (101) 5	Psychology (101)and Education (102).. 5	Education (102) 5
English (146) 5	English (146) 5	English (146) 5
Gen. Chemistry (33) 5	Gen. Chemistry (33) and Food Chemistry (37) 5	Food Chemistry(37) 5

Second Year

Dressmaking(66, 70) 5	Dressmaking (66, 70) 5	Dressmaking (66, 70) 5
Advanced Cooking(72) 5	Advanced Cooking (72) 5	Advanced Cooking(72) 5
Dietetics (74) 5	Dietetics (74) and Bacteriology (23) 5	Bacteriolgy (23).....5
Chem. of Nutrition (38) 5	Chem. of Nutrition (38) 5	Home Nursing (76).. 5
Hist. of Education (103) 5	Hist. of Education (103) and School Admin. (104) 5	School Admin.(104).. 5
English (147) 5	English (147) 5	English (147) 5

HOMEMAKERS' SHORT COURSE

The object of this course is to afford an opportunity to those girls who desire a scientific training in home economics and who can leave the home only during the winter months. Any

girl desiring to take the course may do so regardless of previous preparation.

This course can be completed in two winter terms of four months each. A certificate for the completion of the course is given at the regular commencement exercises in June.

First Year		Second Year	
Sewing (79)	10	Dressmaking (70)	10
Cooking (78)	10	Cooking (72)	10
Art Needlework (68)	8	Home Nurs. (76)	5
English (141)	5	English (142)	5
Mathematics (172)	5	House Mangt. (75)	5

Girls who are capable and who desire to take other subjects besides those named in the course may be allowed to do so, providing such an arrangement does not interfere with the regular schedule.

INDUSTRIAL ENGINEERING COURSES

There are many young men having the required ability for engineering work, who are prevented from entering technical schools and colleges on account of the time and money necessary to complete them. The five courses described below aim to meet the needs of such men.

Each course requires two years in which to graduate. The subjects of instruction are equivalent to those in standard engineering schools, but the theory is taught only in its direct applications to engineering.

BUILDING CONSTRUCTION

For entrance in this course the student must have two years of high school preparation. It is a short practical engineering course preparing the student for work as a contractor and builder and for employment as a building inspector for an architect or as foreman for contractor.

First Year

FALL TERM		WINTER TERM		SPRING TERM	
Mathematics (171)	5	Mathematics (171)	5	Mathematics (171)	5
English (146)	5	English (146)	5	English (146)	5
Drawing (91)	10	Drawing (92)	10	Drawing (92)	10
Carpentry (204)	20	Carpentry (204)	20	Carpentry (204)	20
Elect one		Elect one		Elect one	
History (155)	5	History (155)	5	History (155)	5
Physics (191)	5	Physics (192)	5	Physics (193)	5
Chemistry (31)	5	Chemistry (31)	5	Chemistry (31)	5

Second Year

Est. & Cost (137).... 5	Con. Spec. (38) 5	Elec. Wiring (19)....10
Drawing (95) 10	Drawing (95) 10	Drawing (95) 10
Carpentry (204) 20	Carpentry (204) 20	Carpentry (204) 20
Elect one		Elect one
History (154) or..... 5	History (154) or 5	History (154) or 5
German (182) 5	German (185) 5	German (185) 5

DRAFTING COURSE

The two year course in Drafting requires the equivalent of at least two years of high school preparation. This course is for students desiring a training in Mechanical Drafting, preparatory for positions as draftsmen with industrial manufactures or where ever drafting has a place.

First Year

FALL TERM	WINTER TERM	SPRING TERM
Mathematics (170) .. 5	Mathematics (170) .. 5	Mathematics (170) .. 5
Physics (191) 5	Physics (192) 5	Physics (193) 5
Mechanism (132) 5	Mechanism (132) 5	Kinematics (139) 5
Drawing (91) 10	Drawing (92) 10	Drawing (93) 20
Drawing (92) 10	Drawing (93) 10	

Second Year

English (146) 5	English (146) 5	English (146) 5
Mathematics (171) .. 5	Mathematics (171) .. 5	Math. (171) 5
Chemistry (31) 5	Chemistry (31) 5	Chemistry (31) 5
Des. Geom. (94) 10	Des. Geom. (94) 10	Development
Drawing (95) 10	Bus. Law (50) 5	of Surfaces (93)..10
Elective 5	Drawing (96) 10	Drawing (97) and
		(98) 10
		Con. & Spec. (138).. 5

ELECTRICAL CONSTRUCTION AND EQUIPMENT

This course requires a preparation equivalent to at least two years high school work. It is planned to give the student a practical working knowledge of the electrical construction field. A graduate will be equipped to go out and do practical house wiring for light and power purposes, and install electrical apparatus correctly.

First Year

FALL TERM	WINTER TERM	SPRING TERM
English (146) 5	English (146) 5	English (146) 5
Math. (171) 5	Math. (171) 5	Math. (171) 5
Physics (194) 5	Physics (194) 5	Physics (194) 5
Drawing (91) 10	Drawing (92) 10	Drawing (92) 5
Elec. Theory (113)..10	D. C. (113) 5	Elec. Wiring (119)..10
Shop (201) 10	Shop (202) 10	

Second Year

Math. (172) 5	Math. (172) 5	Math. (172) 5
Chemistry (33) 5	Chemistry (33) 5	Chemistry (33) 5
Elec. Draw. (98) 10	Elec. Draw. (98)....10	Elec. Draw. (98) 10
A. C. (115) 5	A. C. (115) 5	Telephoning (116).. 5
Shop (203) 10	Shop (203) 10	Cont. and Spec. (138)5
	Steam Eng. and Boilers (135) 5	Illumination (118) .. 5

GENERAL ENGINEERING

A three year general engineering course required an eighth grade preparation. This course is for students who desire a training in stationary engineering that will fit them for such positions as trained electricians; as operators of small electric light or gas-driven pumping plants, etc., as special draftsmen in engineering departments, or as special apprentices in almost any industrial engineering field.

First Year

FALL TERM	WINTER TERM	SPRING TERM
English (143) 5	English (143) 5	English (143) 5
Math. (169) 5	Math. (169) 5	Math. (169) 5
Physics (191) 5	Physics (192) 5	Physics (193) 5
Drawing (91) 10	Elec. Meas. (111) 5	Drawing (92) 10
Shop (201) 10	Drawing (92) 10	Shop (201) 10
	Shop (201) 10	

Second Year

Math. (170) 5	Math. (170) 5	Math. (170) 5
Indus. History (155)5	Civics (151) 5	Economics (152) 5
Dir. Current (113).. 5	Dir. Current (113) 5	Elec. Wiring (119).. 5
Drawing (93) 10	Steam and Gas(133) 5	Drawing (93) 10
Shop (201) 10	Drawing (93) 10	Shop (203) 10
	Shop (202) 10	

Third Year

Math. (171) 5	Math. (171) 5	Math. (171) 5
Alter. Cur. (115).... 5	Alter. Cur. (115).... 5	Illumination (118).... 5
Chemistry (31) 5	Chemistry (31) 5	Chemistry (31) 5
Drawing (117) 10	Drawing (117) 10	Drawing (117) 10
Shop (203) 10	Shop (203) 10	Shop (203) 10
		Estim. Con. and Spec. (138) 5

SPECIAL SHORT COURSES

For the benefit of a large class of students, who would find it utterly impossible to leave their work in the early fall, and who find it necessary to drop school work and return to their work on the farm or elsewhere with the coming of spring, several short courses have been arranged which will run during the winter term only and shall require one, two or three years for completion. With this end in view the winter term

has been made as long as seems practical and still keep it in such limits as will best accommodate this class of students. The term begins on the first Tuesday after Thanksgiving and closes on the last Friday in March, and it is urged that all students who contemplate taking these courses shall endeavor to be present for the opening day and stay to the end of the term.

In order to make these courses successful and of benefit to students taking them, it is necessary to crowd a large amount of work into a short time. They are of necessity very heavy courses and require constant and diligent application and attention to work on the part of the student. Upon the satisfactory completion of the full course the student will be awarded a certificate of graduation from his particular course.

THREE WINTER TERM AGRICULTURAL COURSE

For synopsis of this course, see the agricultural courses pages 21 to 22.

TWO WINTER TERM HOMEMAKERS' COURSE

For synopsis of this course, see the home economics courses pages 24 to 25.

THREE WINTER TERM ELECTRICAL COURSE

The short winter term course in Electrical Engineering is especially adapted to the needs of the young man who in this day of modern electrical conveniences on the farm wishes to become familiar with this field of work.

Even though he may not have seriously considered using electricity on the farm up to the present time, nevertheless the time is surely coming when he will take advantage of this silent power of nature and will have his own private power plant driven by water power, wind power or gasoline. Many farmers are near cross country electric transmission lines, who should avail themselves of the opportunity to buy the electricity for lighting and power purposes.

This course is of much practical value to any young man who is using electrical energy extensively or wishes to become proficient in its use.

FIRST YEAR	SECOND YEAR	THIRD YEAR
Arithmetic (175) 5	Algebra (175) 5	Geometry (175) 5
Elec. Meas. (111) 5	Direct. Cur. (112) .. 5	Civics (151) 5
Bus. Law (50) 5	English Com. (142) 5	Alt Currents (114).. 5
Drawing (91) 10	Steam and Gas (133) 5	Telephones (116) 5
Shop (203) 10	Drawing (92) 10	Drawing (92) 10
	Shop (202) 10	Elec. Lab. 10

THREE WINTERS TERM STEAM AND GAS TRACTOR COURSE:

For the young men interested in the principles of Mechanical Engineering, the course in Steam and Gas Engineering offers an exceedingly practical and a very popular course. It meets the demands of a large number of young men, who for various reasons are unprepared to enter the more advanced courses, or who are only able to attend school during the four winter months.

To the young men on the farm especially interested in engines and farm machinery this course offers great possibilities. The course includes a thorough working knowledge of the principles of steam and gas engines as well as the actual practice of running and caring for both the steam and gas form of tractions. It includes practical training in the wood shop, machine shop, blacksmithing and forge work.

In fact this course offers a practical and efficient training for young men on the farm and for those desiring to serve as steam or gas traction engineers. It is strongly advised that the student attend the three full winter terms.

NOTE.—This course may be completed in one year by student entering in the fall and remaining the entire school year.

NOTE.—See description under steam and gas tractor shop No. 213.

FIRST YEAR		SECOND YEAR		THIRD YEAR	
Arith. (175)	5	English (142)	5	Farm Acct. (51)	5
Eng. (141)	5	Math. (175)	5	Drawing (92)	10
Shop (201) or(202)	10	Drawing (91)	10	Steam & Gas Shop (213)	20
Steam & Gas Lecture (133)	5	Steam & Gas Shop (213)	20	Shop (203)	10
Steam & Gas Shop (213)	20	Shop (203)	10		
Elem. Elec. (11)	5	Bus. Law (50)	5		

THREE WINTER TERM AUTOMOBILE COURSE.

This course prepares the student for employment in a garage or enables him to run a garage for himself. The automobile repair shop is equipped with everything necessary for the complete overhauling of all makes of cars. The forge shop, wood shop, and machine shops are located in the same building, making it convenient for the making of all new parts and to replace worn or broken parts. Several cars of various makes are completely torn down and rebuilt every term.

FIRST YEAR		SECOND YEAR		THIRD YEAR	
Math. (175)	5	Math. (175)	5	Farm Acct. (51)	5
English (141)	5	English (142)	5	Drawing (92)	10
Shop (201) or(202)	10	Drawing (91)	10	Auto Shop (212)	20
Steam and Gas (133)	5	Shop (203)	10	Shop (203)	10
Auto. Shop (212)	20	Auto Shop (212)	20	Dir. Cur. (212)	5
Elem. Elec. (111)	5	Bus. Law (50)	5		

Note: This course may be completed in one year by students entering in the fall and remaining the entire school year.

Note: See description under automobile shop No. (212).

ONE WINTER TERM GAS TRACTOR COURSE.

Since there are many young men who for various reasons are able to attend school for only one winter term, a special One Winter Term Farm Engineering Course has been arranged. This course has been very popular for several years. It should not be taken in preference to either of the three winter term courses.

Math. (175)	5	Elem. Elec. (111)	5
English (142)	5	Gas Tractor Shop (213)	20
Steam and gas lecture (133)	5	Shop (201) or (202)	10

ONE WINTER TERM AUTOMOBILE COURSE.

Elem. Elec. (111)	5	Steam and gas lecture (133)	5
Math. (175)	5	Shop (201) or (202)	10
English (143)	5	Auto Shop (212)	20

Note: The one winter term courses are so arranged that, by previous arrangement, a student who desires may take certain prescribed electives and receive credit for the course on the first year of either of the three winter term courses, and thus should he desire to return for more work he may be able to complete one of these courses in two more winter terms.

On completion of the one year courses a certificate of merit is awarded the student.

TEACHER'S TRAINING COURSES

Secondary Rural

Graduates of the secondary or high school courses may have a fourth grade certificate issued on their diplomas, providing they elect at least one term of pedagogy and are eighteen years old.

Graduates of the secondary or high school courses may also have their third grade certificates issued on their diplomas, providing they have elected at least one term of psychology, and two term credits in professional subjects, and they are at least twenty years old and have had eight months of successful teaching experience.

TEACHER'S FOUNDATION HOME ECONOMIC COURSE

This course is for high school graduates only. It is the Junior College Teacher Training Course in Home Economics. It offers practical scientific training in the efficiency and proper administration of home affairs. The practical work is supplemented by the theoretical and professional phases of the work. Problems apt to confront prospective teachers are discussed, and suggestions are given in regard to the methods and manner of presenting subject matter to public school classes.

For synopsis of this course see page 24.

TWO YEAR COLLEGE TEACHER TRAINING COURSE

By conforming to the state school laws, the two year junior college diploma will be valid for two years as a second grade professional certificate, provided that the diploma or certificate implies at least two year courses, or sixteen semester hours, of professional preparation for teaching.

The following outline has been arranged to meet the above conditions:

JUNIOR COLLEGE TEACHER TRAINING COURSE

First Year

FALL TERM		WINTER TERM		SPRING TERM	
Psychology (101)	5	Psychology (101) and		Education (102)	5
Elective	5	Education (102)	5	Elective	5
Elective	5	Elective	5	Elective	5
Elective	5	Elective	5	Elective	5
		Elective	5		

Second Year

His. of Educ. (103)	5	His. of Educ. (103)	5	School Man'gt (104)	5
Elective	5	Elective	5	Elective	5
Elective	5	Elective	5	Elective	5
Elective	5	Elective	5	Elective	5

Note: The elective subjects in the above course must be selected with the approval of the President.

TRADE COURSES

The question of trade courses has become a very important subject, and in offering courses of this kind the State School of Science does so after having given much time and thought to a careful study of the subject as a whole.

As a result of this investigation it has seemed best to outline courses in the various trades which shall include a sufficient number of subjects intended to broaden the intellect and, in a general way, widen the horizon of the student to the end that he may finish the course and come out not only a good carpenter or plumber, as the case might be, but also a good citizen of the commonwealth. He will also have secured a basis or working foundation upon which he may build his own destiny.

For the reasons given above and others which could be given were it necessary, the trade courses thus far offered have been made two year courses of nine months each, feeling secure in the belief that in no shorter time can a training of this kind be given.

The laboratory practice pertaining to the particular course or trade chosen will be full sized work as much as possible, and it is intended to give and require as much of this full sized work as possible in the time allotted to that part of the course.

These Courses are suggestive and not definite. Each student's outline depending upon his education and previous experience.

CABINET MAKING

The object of this course is to train young men to become practical cabinet makers, that they may prepare themselves to earn their livelihood with a practical knowledge of cabinet making and elementary woodwork.

First Year

FALL TERM		WINTER TERM		SPRING TERM	
Math. (169)	5	Math. (169)	5	Math. (169)	5
English (143)	5	English (143)	5	English (143)	5
Drawing (91)	10	Drawing (92)	10	Drawing (92)	10
Shop (201)	20	Shop (201)	20	Shop (201)	20
Gen. Sciences (11)	5	Gen. Science (11)	5	Gen. Science (11)	5

Second Year

Math. (170)	5	Math. (170)	5	Math. (170)	5
English (144)	5	English (144)	5	English (144)	5
Drawing (Elec.)	10	Drawing (Elec.)	10	Drawing (Elec.)	10
Shop (210)	20	Shop (210)	20	Shop (210)	20
Indus. Hist. (155)	5	Indus. Hist. (155)	5	Indus. Hist. (155)	5

CARPENTRY AND BUILDING

In this course the student, after learning the use and care of wood-working tools and the elements of joinery, takes up the special phases of carpentry, including construction of frames, cutting of rafters, stair building, casting, etc., with some practice in actual building, and details in house construction.

The course embraces a variety of bench work which brings into use all the tools commonly used in the trade. It is necessary that the student first obtain a knowledge of how to properly use his tools and how to care for same. Great care is taken that each student acquires a workmanlike use of the various tools, and that he understands how to keep them in fit condition for work.

The student is taught how to lay out and construct centers and window frames; make, case and hang doors; lay beams and set bridging in same; erect and stud partitions, and lay flooring. A complete course in joinery work is also given.

In addition to the work outlined the course includes house construction and framing. Although the lack of space prevents the erection of a frame house of full dimensions, the same attention is devoted to all the details of construction as would be required in similar work on a larger scale. In work of this kind, the pupils obtain a knowledge of the erection of framing for a house, also of sheathing and shingling. The window frames, sashes, doors, etc., are all made and set in position by the young men.

Lectures imparting the scientific features of the trade are also given during the progress of the course.

First Year

FALL TERM		WINTER TERM		SPRING TERM	
English (143)	5	English (143)	5	English (143)	5
Drawing (91)	10	Drawing (92)	10	Drawing (92)	5
Shop (201)	20	Shop (201)	20	Shop (201)	20
Math. (169)	5	Math. (169)	5	Math. (169)	5
Gen. Science (11)	5	Gen. Science (11)	5	Gen. Science (11)	5

Second Year

Math. (170)	5	Math. (170)	5	Math. (170)	5
English (144)	5	English (144)	5	English (144)	5
Indus. Hist. (155)	5	Indus. Hist. (155)	5	Indus. Hist. (155)	5
Drawing (95)	10	Com. Law (50)	5	Con. & Spec. (138)	5
Shop (209)	20	Drawing (95)	10	Drawing (95)	10
		Shop (209)	20	Shop (209)	20

BRICKLAYING AND PLASTERING

In this course the student is given practical work in mixing mortars and cements, the methods of laying brick, the building of walls and flues, the making of angles, corners, offsets, etc., and in applying rough and smooth plaster coats and wall finishes.

In the bricklaying classes the young men are taught first how to handle the trowel and how to spread mortar. The manual instruction includes the building of 8, 12, 16, and 20 inch straight walls; return corners and intersecting walls; piers, arches, fireplaces and flues; setting window frames, sills and lintels; blocking, toothing and corbelling. Fireproof brickwork will also be included in the course. The manner of laying solid, hollow and annular slabs, and how fitted into beams, walls, floors and arches, will be taught.

The scientific instruction will be upon the properties of mortar and cement, and how they should be mixed. Arches, their various styles, and the advantages of each. Flues: their construction and utility. Foundations, walls, bonding, etc.

The course in plastering is arranged for beginners as well as those who are working at the trade. To the apprentice, particularly, this course presents many advantages, as little or no opportunity is given in the trade at large to learn cornicing. The course includes lathing, scratch and brown coat work, hard finishing and cornicing. Detail drawings of chimneys, arches, cornices, etc.; plans, elevations, and sections of houses, flat buildings, and other structures will be required.

First Year

FALL TERM	WINTER TERM	SPRING TERM
English (143) 5	English (143) 5	English (143) 5
Math. (169) 5	Math. (169) 5	Math. (169) 5
Drawing (91) 10	Drawing (92) 10	Drawing (92) 10
Shop (205) 20	Shop (205) 20	Shop (205) 20
Gen. Science (11).... 5	Gen. Science (11) .. 5	Gen. Science (11) .. 5

Second Year

English (144) 5	English (144) 5	English (144) 5
Drawing (96) 10	Com. Law (50) 5	Con. & Spec. (138).. 5
Shop (205) 20	Shop (205) 20	Shop (205) 20
Math. (170) 5	Math. (170) 5	Math. (170) 5
Indus. Hist. (155).. 5	Indus. Hist. (155) .. 5	Indus. Hist. (155).... 5

DRAFTSMEN'S COURSE

The object of this course is to train young men to become practical detail draftsmen, that they may prepare themselves

to earn their livelihood with a practical knowledge of drafting and elementary machine design.

First Year

FALL TERM	WINTER TERM	SPRING TERM
Math. (169) 5	Math. (169) 5	Math. (169) 5
English (143) 5	English (143) 5	English (143) 5
Physics (191) 5	Physics (192) 5	Physics (193) 5
Drawing (91) 10	Drawing (92) 10	Drawing (93) 20
Drawing (92) 10	Drawing (93) 10	

Second Year

English (144) 5	English (144) 5	English (144) 5
Geometry (174) 5	Geometry (174) 5	Geometry (174) 5
Mechanism (132) 5	Mechanism (132) 5	Kinematics (139) 5
Drawing (95) 10	Drawing (96) 10	Drawing (97) 10
Des. Geom. (94) 10	Des. Geom. (94) 10	Devel. of Surfaces (94) 10
Elective 5	Bus. Law (50) 5	Con. & Spec. (138) .. 5

PLUMBING AND STEAM FITTING

In the practical part of the course the student will be taught how to set and connect different kinds of radiators, and how to make the various kinds of coils in common use, such as return coils, miter coils, corner coils, etc. These coils are constructed in various sizes, three quarters to two inch pipe being used. Then follows instruction in piping of dwellings and other buildings, and the various systems of heating, such as steam one pipe, steam two pipe, hot water, direct-indirect, and high and low pressure, are each erected in turn. The students are given a set of plans and on these plans are drawn the actual heating arrangement that would be required for a building of the kind represented. The measurement of each piece of pipe is taken from the plan, and the fittings, valves and other fixtures required to make a complete job are used in the construction of the work. In the workshop there is an arrangement of girders and beams to which the work is suspended, the pipes being run with a proper pitch the same as would be demanded in actual practice. On the completion of each job, connection is made with one of the steam lines of the school, and the work which has been erected receives a thorough test.

The scientific construction consists of lectures on the principles of steam and hot water heating. The lectures will include the following subjects: Tools, fittings and pipes; general heating; low pressure steam; indirect steam heating; single pipe low pressure steam; hot water heating; high pressure steam heating; steam power plant; exhaust heating;

power fan or blower system of steam heating and ventilating.

Drawing includes drafting entire plumbing plans for dwellings, stores, and apartment houses, including floor plans, elevations, and plans for heating, gas, ventilation, sewage, water supply.

First Year

FALL TERM		WINTER TERM		SPRING TERM	
Math. (169)	5	Math. (169)	5	Math. (169)	5
Gen. Science (11)	5	Gen. Science (11)	5	Gen. Science (11)	5
English (143)	5	English (143)	5	English (143)	5
Drawing (91)	10	Drawing (92)	10	Drawing (92)	10
Shop (207)	10	Shop (207)	10	Shop (207)	10

Second Year

English 144)	5	English (144)	5	English (144)	5
Drawing (97)	10	Com. Law (50)	5	Cont. & Spec. (138)	5
Math. (170)	5	Math. (170)	5	Math. (170)	5
Shop (207)	20	Shop (207)	20	Shop (207)	20

PRACTICAL ELECTRICIAN

The trade course for Practical Electricians is designed to give the student actual practical work in installing and operating the important kinds of electrical apparatus. The theoretical side of the subject will be given proper attention. Considerable attention will be given to the application of the National Board of Fire Underwriters' Code to wiring, so that the student will become familiar with these requirements on all kinds of wiring for lighting or power purposes.

In this course the necessary points regarding installation and operation of dynamos and motors both for direct and alternating current will be considered.

A graduate of this course would be able to properly install a private telephone or telegraph, or properly wire a dwelling or small power plant for light and power.

An outline of the subjects considered is as follows:

First Year

FALL TERM		WINTER TERM		SPRING TERM	
English (143)	5	English (143)	5	English (143)	5
Math. (169)	5	Math. (169)	5	Math. (169)	5
Physics (191)	5	Physics (192)	5	Physics (193)	5
Elect. Eng. (113)	5	Elect. Eng. (113)	5	Elect. Eng. (119)	5
Drawing (91)	10	Drawing (92)	10	Drawing (92)	10
Shop (Elective)	10	Shop (Elective)	10	Laboratory	10

Second Year

English (144)	5	English (144)	5	English (144)	5
Math. (170)	5	Math. (170)	5	Math. (170)	5
Elect. Eng. (115)	5	Elect. Eng. (115)	5	Elective	5
Drawing (98)	10	Drawing (98)	10	Prac. Elec. (208)	10
Shop (Elective)	10	Shop (Elective)	10	Shop (Elective)	10

ELEMENTARY VOCATIONAL COURSES

The courses in this department are outlined to furnish a preliminary training to higher vocational courses, similar to that required by many institutions, of students entering the higher courses leading to such professions as law, medicine, engineering, bankers and business men in general.

**Two Year Junior College Courses

** In order that the institution may devote its entire interest and energy to its vocational courses, all college work, (as such for college credit, except that which is necessary to vocational preparation), will be withdrawn from the schedule after the school year 1922-23. To meet this requirement, the school announces that the first year collegiate work will not be offered after the school year 1921-22, and that the second year of college work will not be offered after the school year 1922-23.

JUNIOR COLLEGE COURSE

This course comprises two years of junior college work. The work is elective and the student selects his work with the advice of the faculty and in view of the vocation which he subsequently proposes to pursue. In all courses the proper sequence of subjects must be followed. No course will be given unless elected by at least five students, except by special action of the faculty.

It is strongly urged that students should early in their course select at least one year of work in each of the following departments: Mathematics, chemistry, history, biology, English and two years in French, except when two years of French are offered for entrance.

REQUIREMENTS FOR ADMISSION TO COLLEGE COURSES

The candidate must present three credits in each of the following subjects: Algebra, geometry, English literature, English masterpieces, rhetoric, physics or chemistry, general history. In addition to the above, twenty-four credits must be offered. A credit is four or five recitations per week in a subject for one term.

REQUIREMENTS FOR GRADUATION

Two full years' work of twenty hours each is required to obtain the diploma of this course.

Open to First Year Students

FALL TERM		WINTER TERM		SPRING TERM	
English (146)	5	English (146)	5	English (146)	5
French (181)	5	French (181)	5	French (181)	5
German (184)	5	German (184)	5	German (184)	5
Spanish (183)	5	Spanish (183)	5	Spanish (183)	5
Math. (176)	5	Math. (176 or 177)	5	Math. (177)	5
History (156)	5	History (156)	5	History (156)	5
Chemistry (33)	5	Chemistry (33)	5	Chemistry (33)	5
Biology (15)	5	Biology (15 and 16)	5	Biology (16)	5
Pol. Science (158)	5	Pol. Science (158)	5	Pol. Science (158)	5
Lib. Economy (165)	5	Lib. Economy (165)	5	Lib. Economy (165)	5

Open to Second Year Students

English (147)	5	English (147)	5	English (147)	5
French (Elec.)	5	French (Elec.)	5	French (Elec.)	5
History (157)	5	History (157)	5	History (157)	5
Biology (22)	5	Biology (22 and 23)	5	Biology (23)	5
Chemistry (35)	5	Chemistry (35 and 36)	5	Chemistry (36)	5
Physics (194)	5	Physics (194)	5	Physics (194)	5
Hist. of Educ. (103)	5	Hist. of Educ. (103)	5	School Man'gt. (104)	5

Note: Courses which have not been chosen in the year in which they are first offered as electives may be taken a year later, providing there is not a conflict with some required subject in the schedule.

SUGGESTED GENERAL ARTS COURSE

First Year

FALL TERM		WINTER TERM		SPRING TERM	
English (146)	5	English (146)	5	English (146)	5
German (184) or	5	German (184) or	5	German (184) or	5
French (Elec.)	5	French (Elec.)	5	French (Elec.)	5
Latin (164)	5	Latin (164)	5	Latin (164)	5
History (156)	5	History (156)	5	History (156)	5
Elect one					
Biology (15)	5	Biology (15 and 16)	5	Biology (16)	5
Chemistry (33)	5	Chemistry (33)	5	Chemistry (33)	5
Home Economics (71 and 69)	10	Home Economics (71 and 69)	10	Home Economics (71 and 69)	10
Math. (176)	5	Math. (176 and 177)	5	Math. (177)	5
Psychology (101)	5	Psy. (101) Educ. (102)	5	Education (102)	5

Second Year

English (147)	5	English (147)	5	English (147)	5
French (Elec.)	5	French (Elec.)	5	French (Elec.)	5
History (157)	5	History (157)	5	History (157)	5
Elect two					
Biology (22)	5	Biology (22 and 23)	5	Biology (23)	5
Chemistry (35)	5	Chemistry (35 and 36)	5	Chemistry (36)	5
Home Economics (70 and 72)	10	Home Economics (70 and 72)	10	Home Economics (70 and 72)	10
Physics (194)	5	Physics (194)	5	Physics (194)	5

SUGGESTED COURSE IN GENERAL SCIENCE

First Year

FALL TERM	WINTER TERM	SPRING TERM
English (146) 5	English (146) 5	English (146) 5
French (Elec.) 5	French (Elec.) 5	French (Elec.) 5
Mathematics (176) .. 5	Math. (176 and 177) 5	Mathematics (177) .. 5
Elect two		
Biology (15) or 5	Biology (15 and 16) 5	Biology (16) or..... 5
Chemistry (33) or 5	Chemistry (33) or .. 5	Chemistry (33) or .. 5
Home Economics (71 and 69) 10	Home Economics (71 and 69) 10	Home Economics (71 and 69) 10
Psychology (101) 5	Psychology (101), Education (102)..... 5	Education (102) 5

Second Year

French (elect) or..... 5	French (elect) or..... 5	French (Elect) or.... 5
English (147) 5	English (147) 5	English (147) 5
Physics (194) 5	Physics (194) 5	Physics (194) 5
Elect two of the following		
Biology (22) 5	Biology (22 and 23) 5	Biology (23) 5
Chemistry (35) 5	Chemistry (35 and 36) 5	Chemistry (36) 5
Home Econ. (70 and 72) 5	Home Econ. (70 and 72) 5	Home Econ. (70 and 72) 5
Hist. of Educ. (103) 5	Hist. of Educ. (103) 5	School Man'gt (104) 5

At the present time it is very strongly urged by most higher technical and professional colleges that all prospective engineering students as likewise all pre-law and all pre-medical students take at least a two year junior college course.

It has been generally recognized that the subjects which are preparatory to the more special courses of the higher professional schools are taught best in the small institution.

With the choice of electives in the two year junior college department, the student is able to select several cultural courses along with those which will be most advantageous to him later as he specializes.

PRE-LAW

Law schools require the first two years of a General Arts or Science Course in preparation for law. The most important electives for such a course are English, History, German, Psychology, Education and the Sciences.

PRE-MEDICINE

Two full years of college work is now the minimum requirement for admission to the best medical schools. The two year General Science Course offers the required electives, English, German, Biology, Physics, Chemistry, Education and Psychology.

PRE-ENGINEERING

Engineering schools now advise at least two years of a general college course before taking up the technical work. Such courses as Mathematics, Mechanical Drawing, Physics, Chemistry, English, French and German are foundation for all later engineering courses.

BANKERS AND BUSINESS MEN

Bankers and business men will find it to their advantage to take a two year general college course. Money invested in an education bears the highest rate of interest.

Secondary (High School) Courses

Many students who apply for admission have not been able to secure the advantages of a high school preparation at home and therefore it has been found necessary to outline a secondary course. This course is particularly strong in mathematics, modern languages, and the sciences, while an excellent opportunity is afforded for instruction in drawing and the mechanic arts.

ADMISSION AND GRADUATION

For admission to the secondary courses, the student must pass an examination in arithmetic, English grammar, geography, United States history, orthography, and physiology. Certificates of approved standing will be accepted in lieu of an examination.

Candidates for graduation from the secondary course must present three credits in each of the following subjects: Algebra, geometry, English literature, English masterpieces, rhetoric, physics or chemistry and general history. In addition to the above twenty-four credits must be offered. A credit is one term's work in a subject with four or five recitations per week.

A diploma is granted upon the satisfactory completion of the course.

SECONDARY COURSE

Junior Year

FALL TERM		WINTER TERM		SPRING TERM	
English (143)	5	English (143)	5	English (143)	5
Algebra (173)	5	Algebra (173)	5	Algebra (173)	5
French (181)	5	French (181)	5	French (181)	5
Latin (161)	5	Latin (161)	5	Latin (161)	5
Amer. History (154)	5	Amer. History (154)	5	Amer. History (154)	5
Bookkeeping (42)	10	Bookkeeping (42)	10	Bookkeeping (42)	10
Gen. Science (11)	5	Gen. Science (11)	5	Gen. Science (11)	5
Shop (201)	10	Shop (201)	10	Shop (201)	10
		Farm Account (51)	10		

Middle Year

FALL TERM		WINTER TERM		SPRING TERM	
English (144)	5	English (144)	5	English (144)	5
Geometry (174)	5	Geometry (174)	5	Geometry (174)	5
French (182)	5	French (182)	5	French (182)	5
Latin (162)	5	Latin (162)	5	Latin (162)	5
Biology (12)	5	Biology (13)	5	Biology (14)	5
Sewing (69)	4	Sewing (69)	4	Sewing (69)	4
Cooking (71)	6	Cooking (71)	6	Cooking (71)	6
Stenography (46)	10	Stenography (46)	10	Stenography (46)	10
Drawing (91)	10	Drawing (92)	10	Drawing (92)	10
Shop (203)	10	Shop (202)	10	Shop (203)	10
Agriculture (4)	5			Agriculture (5)	5

Senior Year

FALL TERM		WINTER TERM		SPRING TERM	
English (145)	5	English (145)	5	English (145)	5
Physics (191)	5	Physics (192)	5	Physics (193)	5
History (153)	5	History (153)	5	History (153)	5
Chemistry (31)	5	Chemistry (31)	5	Chemistry (31)	5
Agriculture (1)	5	Agriculture (2)	5	Agriculture (3)	5
Spanish (Elec.) (183)	5	Spanish (Elec.) (183)	5	Spanish (Elec.) (183)	5
Indus. History (155)	5	Civics (151)	5	Economics (152)	5
Drawing (93)	10	Drawing (93)	10	Drawing (93)	10
Shop (Elective)	10	Shop (Elective)	10	Shop (Elective)	10

SUGGESTED HIGH SCHOOL COURSES

The Secondary Department has outlined the following courses: A General High School Course, and elective courses as follows: Agriculture, Commercial Work, Home Economics and Manual Arts.

First Year

REQUIRED SUBJECTS IN ALL COURSES

FALL TERM	WINTER TERM	SPRING TERM
English (142)	English (142)	English (142)
Algebra (183)	Algebra (173)	Algebra (173)
French (181) or	French (181) or	French (181) or
Latin (161)	Latin (161)	Latin (161)
Am. History (154)	Am. History (154)	Am. History (154)

REQUIRED SUBJECTS IN GENERAL COURSE

Gen. Science (11)	Gen. Science (11)	Gen. Science (11)

COMMERCIAL COURSE

Bookkeeping (42)	Bookkeeping (42)	Bookkeeping (42)

HOME ECONOMICS

Gen. Science (11)	Gen. Science (11)	Gen. Science (11)

AGRICULTURAL COURSE

Gen. Science (11)	Gen. Science (11)	Gen. Science (11)
Shop (201)	Drawing (91)	Drawing (92)
	Farm Accounts (51)	

MANUAL ARTS

Gen. Science (11)	Gen. Science (11)	Gen. Science (11)
Shop (201)	Shop (201)	Shop (201)

Second Year

REQUIRED SUBJECTS IN ALL COURSES

FALL TERM	WINTER TERM	SPRING TERM
English (144)	English (144)	English (144)
Geometry (174)	Geometry (174)	Geometry (174)
French (182) or	French (182) or	French (182) or
Latin (162)	Latin (162)	Latin (162)

REQUIRED SUBJECTS IN GENERAL COURSE

Zoology (12)	Physiology (13)	Botany (14)
Drawing (91) or	Drawing (92) or	Drawing (92)
Shop (203)	Shop (203)	Shop (203)

COMMERCIAL COURSE

Bus. Eng. (48)	Com. Law (50)	Bus. Arith (44)
Penmanship (45)	Penmanship (45)	Penmanship (45)
Spelling (49)	Spelling (49)	Spelling (49)

HOME ECONOMICS

Cooking (71)	Cooking (71)	Cooking (71)
Sewing (69)	Sewing (69)	Sewing (69)
Hygiene (77)	Physiology (13)	Home Nursing (76)

AGRICULTURAL COURSE

Agriculture (1)	Agriculture (2)	Agriculture (3)
Zoology (12)	Physiology (13)	Botany (14)
	Bus. Law (50)	

MANUAL ARTS

Drawing (93)	Drawing (93)	Drawing (93)
Shop (203)	Shop (203)	Shop (203)

Third Year

REQUIRED SUBJECTS IN ALL COURSES

FALL TERM	WINTER TERM	SPRING TERM
English (145)	English (145)	English (145)
Physics (191) or	Physics (192) or	Physics (193) or
Chemistry (31)	Chemistry (31)	Chemistry (31)
History (154)	History (154)	History (154)

REQUIRED SUBJECTS IN GENERAL COURSE

German (184)	German (184)	German (184)
Indus. History (155)	Civics (151)	Economics (152)

COMMERCIAL COURSE

Stenography (46)	Stenography (46)	Stenography (46)

HOME ECONOMICS

Cooking (72)	Cooking (72)	Cooking (72)
Dressmaking (70)	Dressmaking (70)	Dressmaking (70)

AGRICULTURAL COURSE

Shop (203)	Shop (202) Steam and Gas (133)	Shop (203)

MANUAL ARTS

Drawing (Elect.) Shop (Elect.)	Drawing (Elect.) Shop (Elect.)	Drawing (Elect.) Shop (Elect.)

One Year Vocational Preparatory or Sub-Preparatory Course

In many cases young people have been hindered from attending school until too old to enter the grades, or to be willing to go to the public schools. Others have failed in a subject or two in the eighth grade. In this course a year's work is offered in the common branches, under competent instruction. Students in this course have all the privileges of the school.

FALL TERM		WINTER TERM		SPRING TERM	
Arithmetic (220)	5	Arithmetic (220)	5	Arithmetic (220)	5
Grammar (221)	5	Grammar (221)	5	Grammar (221)	5
Penmanship (226)	5	Penmanship (226)	5	Penmanship (226)	5
Spelling (225)	5	Spelling (225)	5	Spelling (225)	5
Reading (224)	5	Reading (224)	5	Reading (224)	5
Geography (222)	5	Geog. (222) Hist. (223)	5	History (223)	5

This course is for sixth or seventh grade graduates from the country schools, who for various reasons have been hindered from graduating from the eighth grade. It is just the course to take as a review, for those students who have been out of school for several years, and decide that they want to prepare for entering the high school course or any of the vocational courses requiring an eighth grade preparation.

Description of Courses

The departments of instruction are arranged in alphabetical order.

AGRICULTURE

Mr. Neumann

It is a well known fact that the average Red River Valley farm produces less than it did some twenty years ago. The purpose of the Department of Agriculture is to aid in bringing back these farms to their original fertility. The Science School has a tract of fourteen acres of land which is at the disposal of the Department of Agriculture for purposes of corn breeding, experimental plots, etc. The United States Indian School has a large farm immediately adjoining the Science School campus. Arrangements have been made by which the farm buildings, the animals (horses, swine, poultry, a fine herd of Guernsey cattle), the plans for the years' crops, the silo, etc., will be used by the class for study purposes.

The County Poor Farm, with its fine equipment, excellent Holstein herd, etc., is less than a mile away. Besides these, there are many well-managed farms in close proximity to Wahpeton. Visits to these farms will be made a part of the regular school work.

It is the purpose of the department to study the science of Agriculture in such a way as to lend a deeper interest and a keener insight into the everyday problems of the farm, and thus help the student to cope with these problems in an intelligent and progressive way.

The following courses are offered:

1. Agricultural Chemistry and Soils. Fall and Winter Terms

Enough work is done in chemistry to enable the students to understand the origin of soils, the theory of permanent agriculture, the availability of plant food, etc. The fundamental facts of plant and animal nutrition are taken up. The following is a list of topics that are studied:

(a) Origin and Classification of Soils.
Kinds of soils, and their management.
Crops adapted to various soils.
(b) Manure and Fertilizers.
(c) Plants. How they live, grow and produce.
(d) Insecticides and Fungicides.
(e) The Animal Digestive Processes.
(f) Animal Foods and their Uses.
Recitations, three hours per week.
Laboratory, four hours per week.

2. Animal Husbandry. **Winter Term**

(a) Types and breeds of livestock. The leading types and breeds of Beef and Dairy Cattle, Horses, Hogs, Sheep, and Poultry will be considered.
(b) Care and Management of various kinds of livestock. In this connection a study of the simpler principles of veterinary science and hygiene will be taken up.
(c) Feeding farm animals. Kinds of feed best suited to different animals. Value, purpose, and economy of different feeds.
(d) Dairying. Babcock test. Care and handling of milk and milk products.
Recitations, three hours per week.
Laboratory, four hours per week.

3. Farm Crops **Winter and Spring Terms.**

(a) Cereal Crops. Identification, habits of growth, adaptability to different types of soil.
(b) Forage Crops. A study of the grasses, legumes, and corn. Curing and harvesting.
(c) Root and Fiber Crops.
(d) Common Farm Weeds. Identification and methods of control.
(e) Seed Testing.
Recitations, three hours per week.
Laboratory, four hours per week.

4. Farm Management. **Fall Term.**

(a) Types of farming.
(b) Advantages and Disadvantages of different types of farming.

(c) Planning the farm.
(d) Farm and home conveniences.
(e) Crop Rotations.
(f) Cost of production.
(g) Marketing.

Recitations, five hours per week.

5. Experimental Agriculture. Spring Term.

This course will be given during the spring term of each year, and will consist of as much outdoor work as the season will permit. The school garden and experimental plots will be used for this course.

Laboratory or garden work, ten hours per week.

BIOLOGY

Mr. Jones

The work in this department comprises the subjects of zoology, botany, physiology and bacteriology. The facilities and equipment are specially good. The general laboratory is provided with compound and dissecting microscopes, dissecting instruments, complete imbedding apparatus and microtome, camera lucida, drying oven, reagents and mounting material, and a complete equipment of bacteriological apparatus. It includes autoclave, steam and hot air sterilizers, incubator, high power immersion objective, and an abundance of necessary glassware.

The biological library contains several hundred standard reference books and special papers which are used as a reference library by the students.

In zoology there is provided a fairly complete series of skeletons and charts illustrating the various types of vertebrate and invertebrate structure. There is available a collection of fishes and marine invertebrates from the U. S. National Museum. There are also collections of invertebrates from a variety of localities, which are valuable for demonstration purposes.

In biology the work is largely done in the laboratory. Careful notes and drawings are required, and the laboratory work is supplemented by references, recitations, and lectures.

The following courses are offered:

11. General Science. Fall, Winter and Spring Terms.

The first year science course is an introduction to the sciences. It gives the student an appreciation of the various phenomena with which they are daily coming in contact. It also furnishes a foundation on which to base the later science courses.

Recitations, three hours per week.

Laboratory, four hours per week.

12. Elementary Zoology. Fall Term.

The course has been arranged to give the student an appreciation of some of the more interesting and common forms of animal life. Several of the common forms are studied in relation to their life history, habitat, anatomy, physiology and general classification, with a view to impressing upon the student the importance of animal life and its relation to economic questions.

Recitations, three hours per week.

Laboratory, four hours per week.

13. Elementary Physiology and Hygiene. Winter Term.

A study of the elementary principles of Hygiene and Physiology as relating to the skeleton, the digestive, nervous, circulatory and excretory systems. By means of laboratory work and demonstrations a study of the skeleton and anatomical preparations is made.

Recitations, three hours per week.

Laboratory, four hours per week.

14. Elementary Botany Spring Term.

This course comprises a study of The Seed, its germination, growth and function; The Stem, its growth, structure and function; The Root, its structure and work; The Bud; The Leaf; The Flower; The Fruit. A brief survey of Fungi and their relatives. These topics are studied in relation to the local flora. In addition a small collection of local plants is gathered, identified, and mounted.

Recitations, three hours per week.

Laboratory, four hours per week.

15. Biology A. **First Semester.**

A study of organic life, consisting of both plants and animals, beginning with the lowest type and proceeding to the higher and more complex forms. Several representative types of both groups are studied in the laboratory.

Recitations, three hours per week.

Laboratory, four hours per week.

16. Biology B. **Second Semester.**

This course consists chiefly of the study of biological problems, involving such topics as heredity, variation, theories of evolution, behavior of organisms, and the relation of biology to human welfare.

Recitations, three hours per week.

Laboratory, four hours per week.

17. Invertebrate Zoology. **First Semester.**

A study of the habitat, anatomy, physiology, method of reproduction, and life history of several selected types. Group relationships and evolution problems are introduced and discussed according to the theories of various authorities.

Recitations, three hours per week.

Laboratory, four hours per week.

18. Vertebrate Zoology. **Second Semester.**

A study of the evolution, comparative structure, physiology, habits, and distribution of vertebrates.

Recitations, two hours per week.

Laboratory, six hours per week.

General Botany. **Fall, Winter and Spring Term.**

General Botany comprises the three courses, 19, 20, 21. These courses are arranged as a unit to include a general survey of the plant kingdom. The work is begun with a study of the cell, its anatomy and physiology as related to the elementary life processes of protoplasm. Attention is called to the habitat, structure, nutrition, growth, reproduction and evolution of selected types representing the various groups of plants.

19. Morphology and Physiology of the Thallophytes. Fall Term.

20. Morphology and Physiology of the Bryophytes and the Pteridophytes. Winter Term

21. Morphology and Physiology of the Spermatophytes. Spring Term.

Special attention is paid to the identification and classification of the seed plants. A collection of twenty-five specimens neatly mounted, correctly identified and classified, is required.

Recitations, three hours per week.

Laboratory, six hours per week.

22. Human Physiology and Anatomy. First Semester.

An advanced study in human physiology and hygiene. The subject is studied by means of laboratory, assigned readings, text books, and recitations. The laboratory work comprises a brief historical study of the human body, beginning with a study of the structure, physiology and function of the cell, tissues and chief organs of the body. In addition, certain experiments, illustrating the more common physiological processes, are performed. The recitations are devoted to a study of the chief physiological and hygienic problems relating to the digestive, vascular, respiratory, excretory and nervous systems.

Recitations, two hours per week.

Laboratory, six hours per week.

23. Microbiology. Second Semester.

A general introductory course in microbiology, paying special attention to bacteria, yeasts, moulds and protozoans. A considerable amount of laboratory work, supplemented by reference readings, recitations, lectures, and demonstrations, is applied to a study of the form, habits, and use of microorganisms, in their relation to home economics.

The laboratory work enables the student to make a practical study of the action of yeasts, moulds, protozoans, and bacteria in the preparation and preservation of food, also a practical study of the cause and prevention of disease, including disinfection, disposal of sewage, and a bacterial analysis of air, milk, water and soil.

Recitations, two hours per week.

Laboratory, six hours per week.

Note: Courses 15 and 16, or 19, 20 and 21 are offered for 1917-1918. Courses 15 and 16, or 17 and 18 will be offered for 1918-1919.

CHEMISTRY

Mr. Neumann

The department of chemistry occupies a separate building. The laboratories are large, well ventilated and lighted, and sufficiently equipped to enable students to pursue successfully the courses offered. Students have access to a well selected reference library consisting of standard works in chemistry and current chemical journals.

31. Elementary Chemistry. Fall, Winter and Spring Terms.

This course is the equivalent of what is usually given in a good high school. The fundamental theories of chemistry and the common elements are considered. The chemistry of daily life, consisting of the study of foods, plants, water, air, soil, etc., is taken up in an elementary way.

Recitations, three hours per week.

Laboratory, four hours per week.

32. Agricultural Chemistry and Soils. Fall and Winter Terms.

For description of this course see course numbered 1 under the department of agriculture.

33. General Chemistry. Fall, Winter and Spring Terms.

This course is the equivalent of what is commonly given during the first year of college work. It aims to familiarize the student with the fundamental principles of chemistry, and to give him the working knowledge which is a prerequisite for further work in chemistry. It is also a complete course in itself, enabling students who wish to take only one year of chemistry, to get an understanding of the subject, and to get intelligent ideas of the many chemical problems arising in our present day civilization. The course consists of lectures, oral quizzes, and laboratory practice. The laboratory work is divided into two semesters. The first semester consists of

a study of the properties of the common elements. The second semester is a complete course in qualitative analysis.

Recitations, three hours per week.

Laboratory, four hours per week.

34. Qualitative Analysis. **Second Semester.**

Qualitative analysis is given as a part of the general chemistry course. In place of taking laboratory practice in general chemistry, the student takes qualitative analysis. The work consists of a separation of the bases and acid, as well as some practice in the preliminary examination of substances to be analyzed.

Laboratory, six hours per week.

35. Quantitative Analysis. **First Semester.**

This is a beginning course in quantitative analysis, preparatory to further work in quantitative chemistry.

Prerequisite: General Chemistry and Qualitative Analysis.

Hours and Credit to be arranged.

36. Agricultural Analysis. **Second Semester.**

This course involves the quantitative analysis of Soils, Foods, and agricultural products in general.

Prerequisite: Course 35, Quantitative Analysis.

Hours and Credit to be arranged.

37. Food Chemistry. **Second Semester.**

This is primarily a preparatory course to the work in food study given in the Department of Domestic Science. The laboratory work constitutes a large part of this course.

A study of the different classes of foods and food stuffs will be taken up together with the principles involved in determining the food value of a substance. Among the subjects that receive consideration and study are the principles underlying the preparation of foods, cooking, baking, etc.; food preservation; food adulteration; food decomposition; change in food materials due to heat, enzyme action, bacterial action, etc.; the principles of canning, jelly making, preserving, pickling; fermentation; the action of yeast and baking powders; detection of common food adulterants and preservatives.

Prerequisite: General Chemistry (33).

Hours to be arranged.

38. The Chemistry of Nutrition. Fall and Winter Term.

This course is designed to follow Food Chemistry, course 37. Back refences will be made to the classification, character, and composition of food materials as there taken up. The function of foods, their chemical nature, the changes they undergo in the body, the chemistry of digestion, assimulation, absorption, circulation, tissue building muscle, fat, bone, etc., constitute the chief subjects of study.

Prerequisite: Food Chemistry (37).

Hours to be arranged.

COMMERCE AND SHORTHAND

Mr. Prather, Miss Johnson and Miss Jamieson

This department is maintained with the belief that many young people of this state will be greatly benefited by it.

The purpose of this course is to afford facilities for training young men and women to carry out in a safe and systematic manner the ordinary business transactions that must arise every day of their lives. We believe, that in order to achieve the largest measure of success and in order that he may well perform his duties to himself and his neighbors, the farmer and tradesman, as well as the man in the office, should have a business training adapted to his needs. With this in view we are offering a course of study, including among other subjects, Commercial Law, Accounting, and Business Correspondence, all of which are as valuable to the farmer or mechanic as to the merchant or banker. By keeping accounts the head of the family should be able to reduce the costs of living by knowing to a certainty the sources of waste. By having a knowledge of commercial law a man and his neighbor may be able to avoid costly litigation. The advantages of being able to compose a good business letter cannot be overestimated. While we do not encourage boys and girls to leave the farms or smaller towns for the cities, yet the training received in the advanced courses of this department will fit them for positions in offices and banks should they desire to enter these fields of business.

Any one who has COMPLETED THE EIGHTH GRADE may enter this department. No examination is required on entering the department unless the student wishes to be excused from some subject. Examinations are held at the end of each term in Shorthand, Spelling, Commercial Law, English

Grammar, Commercial Geography, Letter Writing and Business Arithmetic. A final examination will be given in Bookkeeping at the end of the student's work.

All students are urged to enter this department at the beginning of the term when possible, but for those who cannot register then, extra classes will be formed in both bookkeeping and shorthand on Oct. 15, 1918 and Jan. 7, 1919. Classes will not be formed except on these dates and the opening dates of terms.

41. Bookkeeping. Fall, Winter and Spring Terms.

The system we use requires the student to do his own work without the least dependence on any other student. All questions needing explanation are referred to the instructor in charge, thus bringing the student into direct contact with the most thorough knowledge on the subject. The instructors are always ready and willing to help any student who needs it, particularly the backward one.

Our system teaches both the theory and practice of bookkeeping. In our Introductory courses the student is taught the meaning and application of the terms used in business, and when he enters the Actual Business course he has no difficulty in putting them into practice. The 20th Century System is used.

Laboratory, fifteen hours per week.

Classes will be started in Bookkeeping on Sept. 25, Oct. 15, Dec. 4, 1918 and Jan. 7, 1919. No classes will be formed excepting on these dates.

42. Bookkeeping. Fall, Winter and Spring Terms.

Bookkeeping for the secondary courses.

Laboratory, ten hours per week.

43. Actual Business. Spring Term.

The Actual Business course is a miniature business world within itself, and is excellently equipped. The offices are equipped with filing devices, loose-leaf ledgers, etc. The bank has a Burroughs Adding machine which all students taking bookkeeping are taught to manipulate and care for.

The lines of business followed in this course embrace Wholesaling, Retailing, Banking, Commission etc. The work is carefully arranged. Each student is supplied by the instructor in charge with college currency. He leases his store, deposits his money in the bank, buys and sells merchandise, draws checks,

drafts, notes, and at the same time keeps his own books, which are made up entirely of transactions with other members of the class. The student first conducts his business as a single proprietor, then as a partnership. Thus he learns in a short time to do what it would take many months to learn by experience in every day business life.

At the close of the Actual Business work two students exchange and audit each other's books. This is a valuable drill as the field of the auditor is unlimited. These men always receive the highest salaries.

Laboratory, ten hours per week.

44. Rapid Calculation. Fall, Winter and Spring Terms.

Rapid Calculation is a drill of great importance. Special attention is given to short practical methods. Accuracy and speed are insisted upon, and the training received in this class is not only an important aid in bookkeeping, but quickens the intellect and induces energy and thoroughness in all the work.

Every student taking bookkeeping is required to take this subject, and those taking shorthand may do so.

Recitation, two hours per week.

45. Penmanship. Fall, Winter and Spring Terms.

Much attention is given to business writing, as a successful business career requires the ability to write a rapid, legible hand. The student is required to become proficient in order that his books may present a creditable appearance and that his letter writing shall be satisfactory. We use the style of business writing that is taught in the best business colleges in our country.

Instruction is given each student individually at the student's desk, as well as in class. A student is thus enabled to become a proficient business writer in a very short time.

People are awakening to the fact that good writing is essential, and many students from other departments manage to take an hour's instruction in this subject each day. All students taking bookkeeping or stenography are required to take business writing.

Those desiring to take advanced work in Ornamental Writing or Engrossing may do so. Our aim is to make finished penmen of those taking this course. Laboratory, five hours per week.

46. Stenography. Fall, Winter and Spring Terms.

A stenographic course that was satisfactory ten years ago will not meet the requirements today so exacting has become the business public. Our course has therefore been strengthened from time to time to meet this demand and our graduates are competent to satisfactorily fill any position from the start.

Short and easy exercises are first given in this course, followed gradually by longer practice from the simple business letters to more difficult matter. The student masters the various primary exercises thoroughly before proceeding with the advance work. Exercises are given in writing and reading shorthand and in transcribing from shorthand notes to long hand. A special course in dictation is arranged for the purpose of obtaining speed and to acquaint the student with the various heads of business, such as: Wood, Coal, Real Estate, and Insurance, Wholesale and Retail Hardware, Dry Goods, Manufacturing, Loans, Collections, etc. A drill is given in law correspondence and forms of legal documents and is made up of material taken from actual work.

Exercises taken from dictation are transcribed on the typewriter and corrections made. The work is conducted in small classes and the student thus receives a large amount of personal attention.

A Model Office has been fitted up with the most modern office equipment for the purpose of giving the shorthand students actual office practice. In this office the students take dictation just as they will when in the employ of practical business men. Letter filing and billing are features of this office practice. This drill is of inestimable value to the stenographer.

The Gregg system of Shorthand is taught.

Laboratory, fifteen hours per week.

Classes will be started in Shorthand on Sept. 25, Oct. 15, Dec. 4, 1918 and Jan. 7, 1919. No class will be formed except on these dates.

47. Typewriting. Fall, Winter and Spring Terms.

A practical course in touch typewriting is taught. The work is arranged systematically, all work being handed to the instructor for correction. The course is laid out in budget form, each budget making a definite stage in the progress of the student toward his object—the complete mastery of the key-

board by the sense of touch. A complete equipment of standard typewriters is provided for the work in this department.

The department also has a Grammeter Multigraph which all students taking typewriting are instructed to use. This is a machine for duplicating typewriting and is rapidly being added to the equipment of modern offices having a large amount of circular letter work to do.

Laboratory, ten hours per week.

48. Spelling. Fall, Winter and Spring Terms.

Spelling is made one of the most important subjects in our course, and all students are required to take it. The words used are selected with great care, two considerations being constantly kept in view: First, that the word is in common use; and second, that it is likely to be misspelled.

Recitations, four hours per week.

49. Spelling Fall, Winter and Spring Terms.

A continuation of Course 48 for the second year Commercial students.

50. Commercial or Business Law. Winter Term.

A knowledge of the elements of Commercial Law is of value to every one. Many have lost thousands of dollars through ignorance of the points covered by our course.

The purpose of the course is to give the student a knowledge of the fundamental principles of the law as applied to business relations. The subject is taken up in a non-technical way with as thorough study as time permits. The aim is to show the ways that lead from litigation rather than to make lawyers of our students. Contracts, Sales, Negotiable Instruments, Agency, Bailments, Partnership and Corporations receive attention. Cases are cited to show the interpretation of principles. While this course is required of all students in the commercial department, it is profitable study for anyone who in any way will be called upon to transact business. A collection of valuable reference books is accessible to students taking this subject.

Recitations, five hours per week.

51. Farm Accounting. **Winter or Spring Terms.**

This is a short course in bookkeeping, made up of farm transactions. The student is taught the shortest and most simple ways of keeping systematized accounts. The course is valuable to anyone, but more particularly to the farmer. It should be taken in connection with the Agricultural Course.

Laboratory, ten hours per week.

52. Telegraphy. **Fall, Winter and Spring Terms.**

There having been such a demand for telegraphy, this course has been very popular from the start. Our equipment is of the best, and the teacher in charge has had a number of years' experience.

A well equipped wireless station has been installed as a part of the apparatus.

Laboratory, five hours per week.

53. Banking. **Spring Term.**

This course teaches both the theory and practice of Banking. A careful study is made of Federal and State laws regulating National, State and Private Banks. The student is taught how to organize a bank; how the directors and officers are chosen; their duties, powers and liabilities.

The course is open only to those who have carried and completed two terms of the Bookkeeping course.

Recitations, five hours per week.

HOME ECONOMICS

Miss Zuill and Mrs. Morehart

The Home Economics Department occupies the first floor of Burch Hall. The large kitchen, equipped with work tables, cabinets, ranges, sinks, refrigerator and kitchen utensils, accommodates a class of twenty-two students at one time. The dining room opens through a butler's pantry to the kitchen and is used by the classes in serving. There are two large sewing rooms equipped with sewing tables, tables for drafting, sewing machines, lockers, cabinets and a long mirror. A recitation room completes the department.

All girls taking cooking are required to wear simple wash dresses, either cotton or linen. White princess aprons are also a requisite.

The following courses are offered in this department:

61. Institutional Cookery. Fall, Winter and Spring Terms.

This course will be divided into two parts. Four-fifths of the time will be devoted to the actual preparation of food, in large and small quantities, to the proper serving of food and to the forms of meal service. In the fall term the larger part of the time will be given to general large quantity cookery. In the winter term the foods, which should appear on a cafeteria menu will be given the most attention. In the spring term foods which are suitable for the tea room will be prepared.

The balance of the time will be spent in the study of the theory of cookery. Special attention will be given to the planning of menus for school lunch rooms, dormitories, cafeterias and tea rooms, suitability, digestibility, variety and cost being taken into consideration. Practice in estimating the amount of food needed per person, and for groups of individuals and the adaptation of recipes will be given. Other topics such as the preservation and storage of staple and perishable foods and sanitation will be discussed. Regulation of expenditures will be a part of every day's discussion.

Laboratory, twenty hours per week.

Recitation, five hours per week.

62. Institutional Management. Fall, Winter and Spring Terms.

This course is planned to supplement course No. 61. The purpose of the course is to acquaint young women, who are interested in or concerned with the management of a cafeteria, tea room or boarding department of any institution, with the fundamental principles in the management of such an institution.

The subjects studied are planning, equipping, and sanitation of institutional kitchens, dining rooms, lunch rooms, cafeterias and store rooms; selecting equipment—such as furniture, utensils, china, silver, linen, floor coverings, etc., repairing and replacing equipment; buying food supplies and equipment, wholesale and retail; considering contracts, bids, specifications, etc., grades, qualities and cost in relation to season; and managing employees.

The practical side of the course includes the purchasing, examining and testing of foods; examining available large equipment; keeping records and accounts; taking inventories; and laundering. Visits to local institutions will be made.

Recitations, two hours per week.

63. Elementary Sewing and Garment Making. Fall, Winter and Spring Terms.

The aim of this course is to teach the fundamental principles of plain sewing, to emphasize good construction and workmanship, and to develop skill and originality in the designing and making of clothes. A thorough understanding of the use of patterns is obtained by the study of straight line drafting, the drafting system, and the commercial pattern. Special emphasis is placed upon the following topics: Care and use of the sewing machine, the selection of materials and trimmings, with reference to suitability, durability, cost, and laundering possibilities, and the home versus the shop made garment. The student is permitted to spend a part of the time on her own sewing, although arrangements will be made to furnish materials providing she does not wish to sew for herself.

The following garments are made:

Fall Term

Sewing apron with pockets.
Corset cover.
Chemise
Petticoat.
Nightgown.
Princess apron.
Bloomers.

Winter Term

Wash waist.
Wool dress.
Children's sewing.
Outing flannel slip.
Infant's petticoat.
Infant's dress.
Little girl's dress (gingham).
Little boy's suit.
Tailored blouse.
Other children's clothing may be made if time permits.

Spring Term

Lingerie waist.
Separate cotton skirt.
Gingham dress.
Linen dress.
Thin dress (figured or striped).

Additional work will be provided for girls who are capable of accomplishing more than the required amount.

Laboratory, twenty-five hours per week.

64. Textiles. Fall, Winter and Spring Terms.

This course has been planned to give the girl a broader understanding of the textile market and to aid her in the selection and use of textile fabrics. The following phase of the work are dealt with:

(a) History of the textile industries.
(1) Spinning. (2) Weaving.

(b) Classification of textile fibers.
(1) Sources. Vegetable, animal, mineral, artifical.

(c) Detailed study of the leading textile fibers.
(1) Cotton. (2) Flax. (3) Silk. (4) Wool.

(d) Knowledge of fabrics.
(1) Names. (2) Prices. (3) Widths.

(e) Chemistry of textiles.
(1) Adulteration: Reasons for, physical and chemical tests.
(2) Dyeing. (3) Laundering. (4) Cleaning.

(f) Special phases of the subject.
(1) Economic. (2) Social.

Recitation and laboratory, two hours per week.

65. Advanced Dressmaking and Trade Work. Fall, Winter and Spring Terms.

Open to students who have completed Elementary Sewing and Garment Making.

This course affords an opportunity for the girl to acquire skill in the designing and making of the more advanced problems in garment making. In the fall term additional instruction is given in drafting, cutting, fitting, and in the alteration of commercial patterns to fit any measurement. The problems are the alteration of a wool dress and the making of a silk dress.

The winter and spring terms are devoted almost entirely to stock and order work, with the exception of the graduation dress at the close of the year. The trade problems vary, but an effort is made to secure variety in fabric, design and form, in order that the student may obtain experience in all lines.

Lectures and class discussions pertaining to the trade accompany the practical work throughout the year.

Laboratory, twenty hours per week.

66. Costume Design. Fall, Winter and Spring Terms.

The course in Costume Design is closely correlated with the problems in dressmaking. It aims to give an appreciation of the meaning of art in dress, which all individuals should have in order to produce a pleasing and harmonious result.

The lines and proportions of the human figure, with its variations for individul types are studied. Balance in light and dark, color, and color combinations for various types are fully discussed. Emphasis is placed upon the weight, weave, design, and suitability of the textile fabrics themselves, and upon good judgment in the selection and alteration of designs in the leading fashion magazines.

Recitation and Laboratory, four hours per week.

67. Millinery. Fall and Spring Terms.

The aim of a course in Millinery is to enable the girls to better appreciate the value of materials, as well as the suitability of materials and styles.

The course briefly outlined is as follows:

Work with buckram. Bandeaux, buckles, cabachons, foundation work, practice frames.

Bow making. Tissue paper and velvet bows, rosettes.

Fall hat. Designing, shaping, wiring, covering, trimming, lining.

Flower making. Roses, American Beauty, wild, tea; violets.

Work with wire. Practice frame.

Spring hat. Wire frame, covering with straw, lace or chiffon, trimming and lining.

Tinting and renovating. Selection and use of colors, dyeing and cleaning.

Renovating and retrimming last season's hat.

Laboratory, four hours per week.

68. Art Needlework. Winter Term.

The aims of the course in Art Needlework are:

(a) To develop taste, skill, neatness and accuracy in hand work.

(b) To give essentials of good design as applied to Art Needlework.

(c) To apply this knowledge to useful articles, either house furnishing or clothing.

The work required in this course includes crocheting, knitting, tatting, ornamental darning, applique, cross-stitch, hemstitching, Swedish weaving, scallops, initials, French embroidery and eyelets. Each student must furnish her own materials.

Laboratory, four hours per week.

69. Plain Sewing. Fall, Winter and Spring Terms.

The course in Model and Plain Sewing aims:

(a) To teach the fundamental principles involved in hand sewing.

(b) To help the student form correct methods of work.

(c) To develop neatness, accuracy and skill.

The problems in this course include the making of a corset cover, night gown, drawers or combination suit, petticoat or slip, and two cotton dresses. To give the girl a thorough understanding of the use of patterns, the drafted pattern is used for underwear and the commercial pattern for the dresses.

Each new process is developed on a model or practice piece, as it is needed in the making of the garment. Those given are models showing the various stitches, bands and ruffles, seams, decorative stitches, plackets, fastenings and trimmings.

Special emphasis is placed upon the following topics: Care and use of the sewing machine, the selection of materials and trimmings with reference to suitability, durability, cost and laundering possibilities, and the home versus the shop made garment.

Laboratory, ten hours per week.

70. Dressmaking. Fall, Winter and Spring Terms.

Dressmaking is an advanced course in drafting and garment making for students having had Plain Sewing. The object of this course is to establish the fundamental principles of plain sewing and to develop skill and originality in both the designing and making of clothes.

Commercial patterns are studied and used for a part of the garments, so that students may use them more intelligently. The patterns are measured, tested and altered to suit the needs of particular individuals.

Instruction relative to the selection of material is given, special emphasis being placed on economy, suitability and durability. A study of good lines in relation to the individual form is a special feature of the work. The place of various garments in the wardrobe is also discussed.

Each student must furnish her own material. The following garments are made: Tailored blouse, wool dress, lingerie waist, fancy silk waist, and a party or graduation dress. Some time will also be given to the renovating of old mterials.

Laboratory, ten hours per week.

71. Elementary Cooking. Fall, Winter and Spring Terms.

Elementary cooking is designed to meet the requirements of those planning to become Homemakers. Foods are studied and tested so that the effect of heat and moisture may be learned. The principles thus determined are applied to the preparation of simple foods and to combinations of foods. It is not the object of the course to cover the whole field of cookery, but rather to give the girl a thorough understanding of the theory and method involved in the cooking of the more fundamental foods. The various processes are repeated often enough so that a fair degree of skill in manipulation of both materials and utensils is attained. Attention is given to the systematic organization of the home kitchen. The cost of food is studied in relation to the income of the home. The cost of lessons is worked out to serve as a basis for comparison.

The following is a brief outline of the course: vegetables, cereals, eggs, milk and milk products, simple puddings, batters and doughs, dried fruits, legumes, meats, fish, gelatin, desserts, beverages, salads, salad dressings, sandwiches, frozen desserts, planning and serving of meals, invalid cookery, canning and preserving.

Laboratory, six hours per week.

72. Advanced Cooking. Fall, Winter and Spring Terms.

This course is planned to meet the needs of the advanced students, who wish to supplement the work given in Elementary Cooking. The course is also arranged for experienced housekeepers, who wish to obtain a more scientific basis for their work.

Practical work in cooking is given. The principles of cookery and methods of combination are reviewed and applied.

Special attention is given to fancy cooking. An effort is made to secure ease of manipulation. Such topics as marketing, preservation of foods, pure food laws, making of menus, table service and large quantity cookery are given attention. Practice meals and demonstrations are given by the girls in the spring term.

Laboratory, six hours per week.

73. Food Study. **First Semester.**

The aim of the course in Food Study is to make a complete and systematized study of all foods. In general each food is studied according to the following topics: Cultivation and growth, distribution, preparation for market, transportation, care in the home, market products, prices, chemical composition, structure, digestibility, fuel value, dietetic value, cookery and uses.

The following is a brief outline of the course:

(a) Cell. Definition, physical structure, chemical composition, functions and types.
(b) Tissue. Definition, classification, relation of cell and tissue to the human organism.
(c) Metabolism.
(d) Foods. Definition, classification, function of various food principles.
(e) Study of typical starches, cereals, vegetables, fruits, nuts, condiments, flavorings, beverages, milk, meats, poultry, fish, game.
(f) Pure food laws and food inspection.

The work given in this course is closely correlated with the work given in elementary cooking.

Recitation and lectures five hours per work.

74. Dietetics. **Winter and Spring Terms.**

The purpose of the course in Dietetics is to teach the fundamental principles of human nutrition and to apply these principles to the feeding of individuals, families and larger groups living under varying physiological, economic and social conditions.

Sherman's "Chemistry of Food and Nutrition" is used as a text for the recitation work. Rose's "Laboratory Manual for Dietetics" is used as a guide for laboratory work.

The following is a brief outline of the subjects which are studied:

(a) Classification of foodstuffs according to the chemical composition.
(b) Physiology of digestion.
(c) Fate of the foodstuffs in metabolism.
(d) The fuel value of the foodstuffs.
(e) The 100 Calorie portion as a unit or standard portion. and the determination of the weight of different foods yielding 100 calories.
(f) Dietary standards. Nutritive ratio.
(g) Planning of dietaries to fulfill specified energy requirements at definite costs.
(h) Dietaries are prepared in order to compare theoretical and actual meals.
(i) Protein metabolism and requirement.
(j) Ash constituents.
(k) Principles underlying infant feeding. Some practice in the preparation and modification of milk is given.
(l) Diet in diseases.

Recitations and lectures four hours per week and laboratory two hours per week.

75. Household Management. Second Semester.

This course is a study of the home in all its phases. It is designed to give the student a practical knowledge of the problems concerned with the administration of household affairs.

The course covers the following subjects:

(a) House sanitation, including location, site, drainage, disposal of waste, pure water supply, ventilation, heating, lighting and plumbing.
(b) House finishes and furnishings, including the study of house plans, decorations, finishes and coverings for floors, walls, and wood-work, furniture adapted to different kinds of rooms, curtains, draperies, etc. Each phase is studied with respect to suitability and economy.
(c) Household administration. Includes a study of the business management of the home. This subject covers the proper division of the income, keeping of household accounts, organization of work in the home, the servant problem, and entertainment. Other special problems of the household are discussed here also.

(d) Laundry Work.
Recitations and lectures, five hours per week.

76. Home Nursing. **Fall Term.**

The aim of the course in home nursing is to give practical knowledge which may be useful in the care of cases of illness in the home, which are not serious enough to demand a trained nurse, and of accidents and emergencies which may occur in the home or school.

The course includes:

(a) How to keep well.
(b) The sick room. Choosing, furnishing, arrangement.
(c) Household antiseptics and disinfectants and how to use them.
(d) The care of the patient. Observation of symptoms, temperature, pulse, respiration.
(e) Infectious and contagious diseases.
(f) Accidents and emergencies.

Practical demonstrations are given to show the making of a bed with a patient in it, the moving of a patient, the changing of a patient's gown, the laying of trays, the making and applying of poultices, and fomentations, the making of surgical dressings, bandaging, and the bathing and dressing of a baby.

Recitations, lectures and demonstrations, five hours per week.

77. Personal Hygiene. **Spring Term.**

This course considers the fundamental principles concerning the human body in relation to health and general efficiency. It aims to give the girl the knowledge that will enable her to understand the requisite laws of health and to apply them in everyday life.

The topics which are included are: the physiology of digestion, the care of the teeth, the skin, the nails, the hair, hygiene of clothing, the vocal and respiratory apparatus, the ear, the eye, emphasizing the care of school children's eyes, the brain and nervous system, physical exercise, body posture, domestic hygiene, sex hygiene and the hygiene of infancy.

Recitations and lectures, five hours per week.

78. Cookery. **Winter Term.**

This course is planned especially for those girls who wish to broaden their knowledge of the preparation and serving of

foods. Practical work is given in cookery, with special emphasis on the selection and handling of materials and utensils, attractive service of the finished product, economical use of left-overs, and the planning and serving of meals at a specified sum.

Laboratory, ten hours per week.

79. Plain Sewing. **Winter Term.**

The winter term course in Plain Sewing aims to teach the girl the problems involved in the making of simple garments, so that she may be able to do her own sewing. The garments which are made are a corset cover, drawers or a combination suit gown, petticoat or slip, a spring dress and other garments if time allows.

Laboratory, ten hours per week.

80. Business Administration. Fall, Winter and Spring.

This course consists of Business Law, Typewriting and Bookkeeping. In Business Law the student will be taught the rules governing the making of contracts, the rights of single and married women in making contracts, negotiable papers, and partnership. The laws pertaining to restaurant and innkeepers will have special attention. Enough Typewriting will be given to enable the Cafeteria or Tea Room manager to make her menus and write her business letters on the machine. The Bookkeeping will take up the elements of accounting and will enable her to keep her accounts accurately with both creditors and debtors.

Recitation, hours to be arranged.

DRAWING

Mr. Rush

The mechanical and free hand drawing room is well lighted and supplied with the necessary tables and drawing boards. Students furnish their own drawing instruments.

91. Freehand. **Fall Term.**

This course includes lettering, the sketching of geometric forms, and working sketches of parts of machines. Particular attention is given to accuracy in outlines and details, and the elements of perspective.

Laboratory, ten hours per week.

92. Mechanical. Winter and Spring Terms.

This course covers instruction in the proper use of drawing instruments, conventional methods. A series of plates are drawn to illustrate the standards prevailing in common drafting room practice.

Laboratory, ten hours per week.

93. Machine Design. Fall, Winter and Spring Terms.

Working drawings for machines, elementary design and detail of the more important parts of stationary engines, traction engines, boiler settings, etc., are worked out. Special attention being given to proper dimensioning, tracing and blue printing.

Laboratory, ten hours per week.

94. Descriptive Geometry. One Semester.

(a) Problems relating to points, lines, solids, interpenetrations, surfaces of revolution, development, etc.

(b) Recitations and lectures:

Orthology, isometric, horizontal, oblique and perspective projections, shades and shadows including line shading and brush tinting.

Recitations and Laboratory, five hours per week.

95. Carpentry and Building. Fall, Winter and Spring Terms.

Simple and oblique projection applied to construction of wood; plan and elevation of buildings; framing plans of roof; trusses; floor plans; layout of mills and location of machinery; details of open and boxed cornices, gutters, window and door frames for frame and brick buildings; interior trim; details of cabinet work, mantels and wainscoting; development of rake and level mouldings, cornices, brackets and groins; circular head over recess and splayed jambs; problems in stair building and handrail enlargement; tracing; blueprinting; free-hand perspective drawing.

Drafting entire plans for dwellings, stores and apartment houses, including floor plans, elevations, and plumbing plans for heating, gas, ventilation, sewage, water supply, etc.

Laboratory, ten hours per week.

96. Bricklaying and Plastering. Fall, Winter and Spring Terms.

Detail drawing of chimneys, arches, cornices, etc.; plans, elevations, and sections of houses, flat buildings and other structures.

Laboratory, ten hours per week.

97. Plumbing and Steam Fitting. Fall, Winter and Spring Terms.

Detail drawings for installing plumbing and steam fixtures.

Laboratory, ten hours per week.

98. Electrical Design. Fall, Winter and Spring Terms.

Detail drawing illustrating problems given in the Practical Electricity course. For further description see course number 117.

Laboratory, ten hours per week.

EDUCATION

Mr. Morehart

100. Pedagogy. One Semester.

A semester course in elementary pedagogy intended to meet the requirements for a fourth class elementary certificate. It will be the aim of this course to anticipate and solve some of the common problems which beset the young teacher.

Recitations, five hours per week.

101. Psychology. First Semester.

This course is a general survey of the elements of psychology. It will be the aim of the course to give the student an intelligent idea of the organic functions of the brain, the relation of the mind to the five senses as well as the best and most approved methods of training the senses. About twenty-five experiments will be required of each student. Recitations five hours per week.

102. Principles of Education. Second Semester.

A semester course in the theory and practice of teaching. This subject will be considered from the biological, psychological, ethical, social and vocational aspects of education.

Emphasis will be laid upon the need of a more efficient vocational training in the grades.

Klapper's "Principles of Education" will serve as a text.

Recitations, five hours per week.

103. History of Education. Fall and Winter Terms.

This course offers the student an opportunity to become acquainted with the growth of educational thought and school organization from ancient times down to the present day. The work will include a rather brief survey of the education of Egypt, Babylonia, China and India as an introduction. Then in more detail it will take up Greek and Roman education. The Middle Ages will receive sufficient attention to give the student an intelligent idea of the conflicts which led to the Renaissance and the Reformation, with their results and influences on the Modern Era. In this latter age a careful study will be made of the works of Rousseau, Comenius, Herbart, Pestalozzi and Froebel. Lastly, a survey of present day conditions will be made.

Recitations, five hours per week.

104. School Administration. Spring Term.

This course will embrace a thorough study of the American schools in general and those of North Dakota in particular. The work will fall naturally under heads as follows:

(a) The school organization and the parties thereto, with the teacher as a special factor, a study of existing systems, and the function of the public school.

(b) School Law, including a critical study and analysis of the North Dakota school laws and their relation to the school organization.

(c) School Hygiene, including school architecture, school environment, ventilation, lighting, seating, fatigue, contagious and infectious diseases, defective hearing and defective vision.

(d) School Management and Discipline, including the business affairs of a school, personality of school heads, school ethics, community interest and the numerous other phases of school operation.

Recitations, five hours per week.

INDUSTRIAL ENGINEERING

Mr. Riley and Mr. Rush

The purpose of the Industrial Engineering department is to provide practical and serviceable education for young men in the electrical and mechanical lines of engineering.

The equipment consists of the various shops, machine, wood, forge and electrical, as well as the steam and gas engine laboratory. The laboratories are well equipped with apparatus and machinery for testing, experimenting, and actual operation of the various engines and machines.

The department is divided into two divisions, the electrical and mechanical divisions, under which are described the respective courses.

ELECTRICAL ENGINEERING

Mr. Rush

The Electrical Engineering laboratory offers excellent facilities for doing the regular direct current engineering experiments and the elementary alternating current experiments and tests. The 220 volt three phase alternating current is taken from the city service into the laboratory. Here it is fed into the induction motor and a synchronous motor. These are used for making tests and for running the various series, shunt and compound, and A. C. generators. An H K. W. compound D. C. generator furnishes current for running the series, shunt and compound motors and for exciting the alternator field and also for making laboratory tests. Direct current and alternating current, both single phase and polyphase, are on tap at the general switchboard. Here all the machines, water rheostats, the lamp bank are connected, while the H K. W. generator is connected to a marble panel switchboard with its own meters, switches, circuit breaker, field rheostat, etc. The school has a full line of meters, tachometers, speed indicators, rheostats, circuit breakers, prony brakes, etc. The Telephone Department has secured a number of different types of series and bridging telephones.

A complete Wireless Telegraph outfit has been added to the laboratory equipment for those who wish to give attention to this new science.

111. Electrical Measurements. Fall or Winter Terms.

This course is designed to familarize the student with the voltaic cell, simple electrical circuits, and the units used in electrical engineering work. The work will be about equally divided between the laboratory and recitation rooms.

Recitations, two hours per week.

Laboratory, six hours per week.

112. Direct Current Machinery. Winter Term.

Theory of magnetic circuit. Fundamental principals of motors, generators, and other direct current apparatus. Systems of distribution, losses, efficiencies, electric lighting and storage batteries.

Recitations, two hours per week.

Laboratory, six hours per week.

113. Direct Current Machinery and Theory. Fall and Winter Terms.

This course is similar to courses 111 and 112 combined, but is more advanced, for students of a grade equivalent to high school and college.

Recitations, two hours per week.

Laboratory, six hours per week.

114. Alternating Current Machinery. Winter Term.

This is an elementary course in the generation, transformation, and utilization of alternating electric currents.

Recitations, two hours per week.

Laboratory, six hours per week.

115. Alternating Current Machinery and Theory. Fall and Winter Term.

This course is similar to course 114, but more advanced, for students of a grade equivalent to high school and college.

Recitations, two hours per week.

Laboratory, six hours per week.

116. Telephony. Winter Term.

The construction and operation of the different parts of the telephone. Series and bridging systems. Central station in-

stallation, and operation. Line construction, batteries, protective devices. Telephone troubles and their remedies.

Recitations, two hours per week.

Laboratory, six hours per week.

117. Electrical Design. Fall, Winter or Spring Term.

In this course, the work in mechanical drawing as outlined under Drawing 98, is continued, with special reference to the design and details of electrical machinery and wiring layouts.

During the latter part of this course the student draws the plans, and makes all calculations, including cost data, for the installation of an electric plant on a farm or in a town.

Laboratory, ten hours per week.

118. Illumination. Spring Term.

This course will cover the study of light and illumination. How to calculate the size and kind of units and the distribution of them to accomplish the best illumination for different kinds of service.

Recitations, two hours per week.

Laboratory, six hours per week.

119. Electric Wiring. Spring Term.

A study of wiring systems; National Underwriters Code; Calculation of wiring outlays, together with practical work.

Laboratory, ten hours per week.

120. Practical Electricity. Spring Term.

See shop course No. 208.

Laboratory, ten hours per week.

121. Electric Starters. Winter Term.

This course covers the principles of the electric circuits used in automobile electric starting and lighting systems. A considerable part of the time is spent in studying the typical systems in actual operation.

Recitations, five hours per week for six weeks.

MECHANICAL ENGINEERING

Mr. Riley

The mechanical department is located in the mechanical building. This building is constructed of concrete blocks, is one story high, neat in appearance and conveniently arranged and situated. In it are located the engine laboratories, machine, wood, trade and forge shop.

The engineering laboratory is provided with several types of engines, both throttling and automatic, and for the work in traction engineering two engines are provided.

Several makes of gasoline engines are available. The laboratory work will include tests on different types of engines to determine power developed, economy of operation, etc. All necessary gauges, indicators, and other instruments of precision will be provided.

For the study of the strength of materials, a 50,000 lb. tension and compression machine is provided, and for transverse testing of beams, bars, etc., a suitable machine will be furnished.

In the general library will be found the leading technical papers and magazines.

131. Mechanical Laboratory. Fall, Winter and Spring Terms.

A study of the strength of materials when subjected to longitudinal, transverse and compression strains, efficiency tests of various machines such as hoists, screws, etc., and economy test runs on engines and prime motors of various kinds.

Ten hours per week, laboratory.

132. Mechanism. Fall and Winter Terms.

A study of the simple mechanical motions and their application to mechanical uses in general.

Recitations and lectures, five hours per week.

133. Steam Engines and Gas Engines. Winter Term.

This course comprises a study of steam boilers and engines of all types with special reference to the care and management each should have, together with a similar study of gas engines and gas tractors in all their various forms. Gas engine troubles in general are given careful consideration.

Five hours per week.

134. Engineering Practice Laboratory. Winter Term.

In this course the student is taught to actually run the traction engines and is given practical directions in handling, repairing and caring for such engines.

Laboratory, four hours per week.

135. Steam Boilers and Engines. Winter Term.

A study of the construction and operation of steam boilers and engines covering the various types, appliances, etc., of both boilers and engines usually found in the best modern practice. Especial attention is given to thresher engines and their operation.

Recitations and laboratory, five hours per week.

136. Gas Engines. Spring Term.

An elementary study of the theory of internal combustion engines including the various cycles in common use today, together with a consideration of governing devices, ignition systems, etc.

Recitations and laboratory, five hours per week.

137. Estimating and Cost. Fall, Winter and Spring Term.

Estimating the cost of materials, fixtures, labor and figuring discounts for each trade.

Recitations, five hours per week.

138. Plans and Specifications. Fall, Winter or Spring Term.

Practice in drawing and writing the necessary specifications from plans for the different structures and constructions of the trade.

Recitations, five hours per week.

139. Kinematics. Spring Term.

A study of motions relative to fixed points, etc., together with a practical application of the principles of mechanism.

Recitations, five hours per week.

DEPARTMENT OF ENGLISH

Mr. McMahon

The English Department aims to assist each student to attain that knowledge of Composition and Literature which will be best suited to the purposes of his life. The work in Composition deals with the principles of clear thinking in their relation to effective expression. Scientific literature will be studied according to vocational requirements. Creative literature will be studied as a factor in the aesthetic, moral and spiritual processes of life. The Department is aided and advised by directors of vocational departments. The English language is taught not only as one of the necessary tools of the craftsman but also as essential to the expression of character and good citizenship.

Exercises along the following lines will be conducted in every course offered by the department:

1. Scientific reading, assigned, according to the needs of each student, after consultation with the head of the vocational department in which the student is working.
2. The use of the dictionary to cultivate accuracy in the use of words and to increase vocabulary.
3. Vocal delivery and parliamentary practice.
4. The use of encyclopedias and other reference works.
5. The principles which apply to appreciation of literary values.

WINTER TERM COURSES

Students who register for the winter term only will be admitted to the English course for which their previous preparation best fits them. All English courses are so arranged that the work of the Winter Term constitutes a unit of credit. Students entering for the Winter Term should confer at once with the instructor in English. The instructor after consulting the director of the vocational department in which the student is enrolled will indicate to the student the general plan of his work in English.

141. Review of Grammar. Fall, Winter and Spring Terms.

This course is intended for students with a limited preliminary education. The rules of grammar will be applied to practical work in composition. The course aims furthermore to

demonstrate the nature of language as an instrument for clear and forceful expression of thought.

Recitations, five hours per week.

142. Business English. Fall or Winter Terms.

This course is given during the fall term and repeated with some additions during the winter term.

The aim of the course is to teach the fundamental principles of composition and the application of these principles in business letters and other forms of expression necessary to the vocations which our students will pursue. The course is open to all students of the school who have not completed two years of high school work or its equivalent.

Recitations, five hours per week.

143. Composition and Literature. Fall, Winter and Spring Terms.

This course presupposes English (141) or equivalent preparation. It aims to introduce the student to the principles of Rhetoric as applied to planning and perfecting themes. Subjects for practice in writing will be derived largely from the experience of each student in vocational work and from his observations and readings concerning the life of the present. Frequent use will be made of a standard weekly magazine, such as The Independent or The Outlook.

Recitations, five hours per week.

144. Composition and Literature. Fall, Winter and Spring Terms.

This is a direct continuation of the previous course and aims to complete the student's knowledge of the elements of the art of composition. In addition to scientific reading along vocational lines, assignments will be made which shall lead to discussion and appreciation of some of the best works of English and American Literature.

Recitations, five hours per week.

145. National Literature. Fall, Winter and Spring Terms.

Practice in speaking and writing is common to all courses. In this course, the subjects for practice in speaking and writing will be derived partly from national literature, partly from scientific reading and study. Vocational English will be empha-

sized particularly during the Winter Term. Throughout the year considerable attention will be given to American Literature, past and present, with particular attention to the influence of literature on national ideals and civic responsibilities. The second half-year will include a rapid survey of the history of English literature and its relation to American life and thought.

Recitations and occasional lectures, five hours per week.

146. Advanced Composition. Fall, Winter and Spring Terms.

To this course are admitted students who have completed English (145) or who have graduated from any good High School. The course will include practice in Business English and an introduction to the literary requirements for certain kinds of scientific research. Considerable attention will be given to the planning and composing of long themes. It is assumed that each student registering for this course has definitely fixed his vocation. It is the business of this course to give to men and women who are seeking first class positions in the world of trade the kind of training in composition and literature which is best suited to their purposes. Lectures and assigned readings will deal with standard forms of literature and their relation to literary interpretation.

Recitations, lectures and conferences, five hours per week.

147. Argument and Public Speaking. Fall, Winter and Spring Terms.

This is a course in the theory and practice of Argument. Students in this course will study selections chosen from the work of masters of Argument, especially Burke, Webster and Lincoln. Library reference work will be centered chiefly on current magazines and on the Congressional Record. Five carefully prepared debates will be held during the year. Daily recitations in this course will be largely given over to informal debate. Attention will be given to the principles essential to clear and effective public speaking.

Recitations, five hours per week.

HISTORY AND POLITICAL SCIENCE

Mr. Morehart and Mr. Smith

In all courses of history offered in this department an attempt will be made to interpret the material of the subject so as to obtain its full guidance, cultural and informational values. At all times the spirit of the days in which events happened will be kept in mind. Remembering, also, that history in its final analysis is nothing more than the mental life of man, it will be the constant aim of each course to trace this development, not only through the period under consideration, but to its final and present day results. As far as possible judgments and applications will be made to agricultural life.

151. Civics. **Winter Term.**

The course is given by text-books, lectures and reference reading. It will include a thorough study of the organization and function of various departments, legislative, executive and judicial, as they pertain to local, state and national government. The aim is to give the student an intelligent understanding of the government under which he lives.

Winter term, five hours per week.

152. Economics. **Spring Term.**

This is an elementary course, giving a general survey of the entire field of economics in terms of agricultural life. Attention will be given to the underlying principles of the science as an introduction to advanced courses, or as a part of a general education. Assigned readings on current economic questions will supplement the text. Any student may, by doing special reference work, receive college credit for this course.

Spring term, five hours per week.

153. Ancient History. **Fall, Winter and Spring Terms.**

This course is a general survey of the life and times of the ancient peoples of Europe, Asia and Africa. The work begins with the close of the prehistorical period and extends to the time of Charles the Great. In view of the tremendous influence that the culture of the ancients has on our art, philosophy, law, literature and in fact every phase of our education, all students in the preparatory department are urged to

take this work in order that they may have an intelligent idea of this great fund of knowledge indispensable in the study of liberal arts.

Recitations, five hours per week.

154. U. S. History. Fall, Winter and Spring Terms.

This is a course in American History covering the events in European History which led to the discovery of America, its exploration, settlement of the colonies, the colonial struggle for independence, and our national period. The work will be closely correlated with American civics.

Recitations, five hours per week.

155. Industrial History. Fall, Winter and Spring Terms.

This course will trace the development of industries, commerce and transportation in the United States. The life of the people and their activities in securing a living and in the building up of the material greatness of the country will be considered, with special emphasis on conditions in the twentieth century. The work will be based upon a standard text, and may be taken by students of advanced secondary standing, or by those in the vocational courses of higher grade. The student should be well grounded in United States history and civil government.

Recitations, five hours per week.

156. Medieval and Modern History. Fall, Winter and Spring Terms.

(1) History of the Middle Ages. This course is a study of European life and conditions from the eighth to the fifteenth centuries. The work of the great civilizing agencies and the developing life of the times are emphasized in order to understand the influences which contributed to the formation of the states of modern Europe.

Recitations, five hours per week for the first half year.

(2) Modern History. A study of European history since 1500. The social, political and industrial life of the people and how these factors have contributed to the greatness of modern nations are studied. The great questions of international policies and relations receive attention.

This course may be taken separately, or with the preceding course to make a full year's credit.

This course wil be given in 1918-19.

Recitations, five hours per week for the second half year.

157. English and American History. Fall, Winter and Spring Terms.

The course will alternate with course 156.

(1) English History. The history of England from early times to the reign of George V. Special attention will be given to the life of the people, and to the vocational and industrial phases of the national life. The expansion of England and the development of liberal government and industrial autonomy in her colonies will be considered.

Five hours per week for a half year.

(2) American History. The last half of the year will be devoted to a study of the development of institutions in America with special emphasis upon the economic and industrial phases of American life. Some periods of the history will be studied quite critically, and the work will be adapted to the needs and wishes of the class.

Five hours per week for the second half year.

Prerequisites, courses 156 and 157, courses 151, 153, 154 or equivalents.

158. Political Science. Fall Term.

An introductory course which will deal with both the principles of government and with the privileges and rights of the individual under the various relations he maintains with the community. The political, property and personal rights of the citizens in relation to his local government will receive consideration. This will be very largely a lecture and reading course, and the pupil should be well prepared in elementary civics and history.

Recitations, five hours per week.

159. Sociology. Spring Term.

An elementary course in the study of society designed to furnish a scientific method of studying conditions and activities of human life. After the general laws which govern man's social relations have been mastered, it will be the aim of the course to apply these laws to the life in the middle west.

Recitations, five hours per week.

LATIN

Mr. Ward and Miss Miles

161. Latin Lessons. Fall, Winter and Spring Terms.

Latin lessons and reading of prose during the fall and winter terms. Caesar, spring term.

Recitations, five hours per week.

162. Latin (Continued). Fall, Winter and Spring Terms.

Fall term—Caesar's Gallic Wars.
Winter term—Caesar's Gallic Wars, completed.
Spring term—Cicero's Orations.
Recitations, five hours per week.

163. Latin (Continued). Fall, Winter and Spring Terms.

Fall term—Cicero's Orations.
Winter term—Vergil's Aeneid.
Spring term—Vergil's Aeneid.
Recitations, five hours per week.

164. Latin (Continued). Fall, Winter and Spring Terms.

Fall term—Livy, Selection from Books I, XXI, XXII, with review of syntax.

Winter term—Latin Literature and Latin Prose, based on Machail's Latin Literature.

Spring term—Cicero, DeSenectute, and Amicitia.

Recitations, five hours per week.

LIBRARY ECONOMY

Miss Mirick

At the beginning of the school year, a lecture on the use and resources of the library is given to all students.

The course in library economy is designed to help the general student and reader in the most efficient use of any library. Practice work will be given in the care and selection of books, cataloguing, classifications and reference work, using the school library as a laboratory.

Fall term, or spring term, two hours per week.

MATHEMATICS

Mr. Ward and Mr. Rush

The work in this department will be given with a view to its direct applied use in subsequent mathematical courses, as well as in physics and engineering. For this reason principles and operations will receive primary attention, special stress being laid upon those used the most frequently. Much time will be devoted to their application through many simple problems, similar to those which will arise in the future, while the study of the long complicated puzzle problem will be discouraged. In the earlier course each symbol and operation is, as far as possible, brought before the pupil only after its need has been demonstrated. The laboratory method is brought into play as far as possible, making the student do the work he really needs the most.

169. Math. 1. **Fall, Winter and Spring Terms.**

A course in practical arithmetic and algebra for students taking trade courses. Enough algebra is taken up to enable the student to understand the formulas necessary in their work.

Recitations, five hours per week.

170. Math. 2. **Fall, Winter and Spring Terms.**

A continuation of Math. I. taking up algebra and geometry in a practical way for trade school pupils.

Recitations, five hours per week.

171. Math. 3. **Fall, Winter and Spring Terms.**

For students who have graduated from high school or who have completed the regular high school mathematics subjects. This course consists of geometry and trigonometry especially adapted to trade work.

Recitations, five hours per week.

172. Agricultural Arithmetic. **Winter Term.**

This course includes a review of the elementary principles of the subject and their application as far as possible to farm problems.

Recitations, five hours per week.

173. Academic Algebra. Fall, Winter and Spring Terms.

The year's work is through quadratic equations together with a limited study of radicals and exponents with a view of their use in advanced mathematics. The chief aim of the course however will be to acquire a mastery of algebraic methods with special emphasis upon the four fundamental operations and factoring. The solution, interpretation and application to practical problems of algebraic question is the basis of the course. The graph is also taught, not necessarily with a view of higher mathematics, but so students may be able to understand graphic representations appearing in magazines, newspapers, state and national bulletins, and common books.

Recitations, five hours per week.

Prerequisite, Arithmetic.

174. Plane & Solid Geometry. Fall, Winter and Spring

Geometry is fundamental to a thorough course in physics and is applicable to things in everyday life. Continuity of thought is considered at all times but chief attention is given to those theorems which are most serviceable and to a thorough mastery of simple constructions. These in turn are applied to simple problems to illustrate their use.

Recitations, five hours per week.

Text:—

Prerequisite, Algebra.

175. Engineering Short Courses. Winter Term.

The work in mathematics for the engineering short courses with Arithmetic the first year. The most fundamental principles and their applications are reviewed.

In the second year Algebra is studied. It is continued through simultaneous linear equations. The main topic of this course will be the equation; its use and interpretation. It will be studied from the graphic as well as from the analytic standpoint. Its use in showing and explaining different mathematical and physical laws and formulas will be taken up as well as its use in solution of problems.

A short course in the elements of plane geometry and mensuration will be given the third year. The work must of necessity be taken up more briefly than in (174). Constructions and the solution of numerical problems will also receive a more prominent part.

Five hours per week through the three years of the Engineering Short Course.

Texts: Milne's Standard Arithmetic, Milne's Algebra, Wentworth's Geometry.

176. College Algebra. **First Semester.**

A hasty review of the principles learned in course 13 is first made. It is then continued through variations, ratio and proportion, indeterminate forms, limits, progression, binominal theorem, annuities, permutations, probability, meaning of series, differencies, indeterminate coefficients, scales of notations, theory of numbers and divisibility, general properties of equations, graphic representation of equations and vectors.

Recitations, five hours per week.

177. Trigonometry. **Second Semester.**

The object of this course is a mastery of the solution of the triangle, its application to surveying and physics, and the gaining of a facility in the handling of logarithms. The necessary working formulae, solution of equations, etc., are studied carefully. Graphic solutions, drawn to scale, are considered in the early part of the course. Many formulae are also solved graphically.

Recitations, five hours per week.

178. Analytical Geometry. **First Semester.**

This is an elementary course in plane analytic geometry. Curves are carefully plotted and the relation between the curve and its equation are thoroughly studied. Much attention is given to conic sections.

Text: Smith and Gale's Introduction to Analytic Geometry.

Prerequisite: Math. 176 and 177.

Five hours a week, first semester.

179. Surveying. **Second Semester.**

This course includes the study of surveyors' instruments with particular reference to their proper care and adjustment, running levels by methods of fore-sights and back-sights from an established bench mark, triangulation, and the simpler problems of plane land surveying will be made as comprehensive as

the preparation of the student and the time allotted the subject will permit.

Recitations, five hours per week.

MODERN LANGUAGES

Miss Miles

In all classes the Direct Method is used as far as is practicable, special emphasis being placed on conversation. The phonetic transcription of the International School of Phonetics is employed in order that the student may acquire as accurate a pronunciation as possible. Throughout the course effort is made by means of reports and illustrated lectures to give the pupil an insight into the history of the people, whose language is being studied.

181. French. **Fall, Winter and Spring Terms.**

A course in beginning French.

Text: Fraser and Squair Part I is completed. During the second half of the year "La Belle France" is used.

At the completion of this course the student should be able to read and understand the French of every day use.

Recitations, five hours per week.

182. French **Fall, Winter and Spring Terms.**

A direct continuation of French 181.

Fraser and Squair grammar is completed. The reading for this course consists of a number of interesting French stories. This reading is used as a basis for conversational work.

Recitations, five hours per week.

183. Spanish. **Fall, Winter and Spring Terms.**

A course in beginning Spanish will be given provided there is sufficient demand for the same.

Recitations, five hours per week.

184. German. **Fall, Winter and Spring Terms.**

This course is divided into a two and a three hour course.

Only those having completed two years of High School German are eligible.

The three hour course consists of reading from the classic and modern writers. German is spoken as much as possible.

Suggested texts: Schiller's "Wilhelm Tell;" Maria Stuart, "Die Jungfrau von Orleans;" Goethe's "Hermann und Dorothea;" Lessing's "Minna von Barnhelm;" Heine's "Harzreise."

The two hour course is based on Pope's German Composition, and is intended to be a practical course in German composition and conversation.

Recitations, five hours per week.

PHYSICS

Mr. Rush

The department is well equipped with apparatus for lecture demonstrations and for individual laboratory work in both preparatory and college physics, with which practical applications are constantly made.

Physics is the foundation for all engineering work and a knowledge of its principles is necessary for an understanding of advanced chemistry, astronomy, geology, agriculture and biological sciences. Nearly all natural phenomena may be explained by the principles of physics thus showing the far-reaching importance of the subject. Not only the scientist but the one who wishes to have an intelligent idea of the natural world around him should be acquainted at least with the elements of this subject.

Elementary Physics.

The work in this course consists of demonstration, recitations, and individual laboratory exercises. The pupil is taught to make accurate measurements, observations, and conclusions and to write them in a clear, neat, and systematic manner.

The year's work is divided into three courses equivalent to the regular high school course in physics and is required for admission into college physics. The courses follow.

Text: Carhart and Chute.

Recitations, three hours per week.

Laboratory, four hours per week.

191. Mechanics. **Fall Term.**

192. Sound, Light and Heat. **Winter Term.**

193. Magnetism and Electricity. **Spring Term.**

Advanced Physics.

The course in advanced physics covers the same ground as the elementary course, but the work is more advanced, the treatment more thorough and mathematics are used more extensively. In laboratory the students are given high grade apparatus with which to work and they are required to get accurate results which are then concisely written in suitable form. Much use is made of curves to show and explain results of experiments. This is a course in general physics and is required of those taking engineering courses of college grade.

Text: Carhart's College Physics.

Recitations or lectures, three hours per week.

Laboratory, four hours per week.

Prerequisites: Elementary Physics, 191, 192, and 193. Also, Mathematics, 173 and 174.

194. (a) Mechanics. **Fall Term.**

194. (b) Sound, Light and Heat. **Winter Term.**

194. (c) Magnetism and Electricity. **Spring Term.**

SHOP.

Mr. Rush, Mr. Riley, Mr. Brunner, Mr. Zilgett

The purpose of shop work is to have the student become familiar with the use of tools and machines by handling them himself. The shops are all equipped with the same kind of tools and the same kind of machines as are used by the best mechanics in their particular field.

Wood Shop

For the work in joinery and pattern making the following equipment is provided, viz: Rip and cut-off circular saws, band saws, a bench trimmer, five speed lathes and one pattern-maker's lathe with the usual chisels and gouges, nine improved manual training benches with quick-acting vices and drawers containing the necessary tools for the work required.

Forge Shop

In the forge shop will be found 15 Sturtevant cast iron forges, each connected to the powerful blast and exhaust fans to furnish the necessary blast and carry off the smoke and gases which are so disagreeable if not properly taken care of. All the necessary tools are furnished by the department. The shop is well lighted, steam heated, and has cement floors so that it may be kept neat and clean.

Machine Shop

The machine shop is furnished with one 14 inch by 6 feet Flather engine lathe, one 10 inch by 4 feet Sebestain engine lathe, one 14 inch by 6 feet American quick change gear engine lathe, one 14 inch by 6 feet Monarch engine lathe, a 16 inch Flather shaper, a 20 inch Barnes upright drill, a 22x24 inch Cincinnati iron planer, a No. 2 Kempsmith milling machine, an emory grinder, grindstone, and the necessary tools, vices, etc., for the successful carrying on of the work.

Electrical Shop

The students in the electrical courses are given considerable work of repair nature on electrical apparatus, such as on motors, generators, and electrical instruments. The electrical laboratory is well equipped for work of average size, viz., up to 10 or 15 H. P. motors, either direct or alternating current.

Automobile Shop

For the work in automobile repairing a suitable place is provided for storing and repairing six to eight cars. These cars are supplied by owners desiring repairs and adjustment and constitute a wide range of makes and models. Everything necessary for overhauling and repairing is supplied including a welding plant and a tire repairing plant.

Steam and Gas Tractor Shop

This shop is well supplied with both oil and gas burning tractors ranging from ten horse power to sixty horse power, and one large modern steam tractor. Several stationary steam engines of both throttling and automatic type are also located

in this shop. A complete line of stationary gas engines of all kinds and sizes are loaned the school by the various dealers for experimental purposes every term.

201. Joinery and Pattern Making. Fall, Winter and Spring Terms.

The use and care of wood working tools and machinery, speed lathe and bench work and practices used in making machine patterns, castings, flasks, etc.

The work in joinery includes a series of joints and exercises intended to give the student practice and skill in the use of ordinary bench tools. The wood lathe work gives them an idea of the capabilities of that machine and the pattern work is made as practical as possible with the intention of giving the student a clear understanding of the actual shop practice used in the making of patterns.

Shop practice, ten hours per week.

202. Blacksmithing and Forge. Winter Term.

The use of tools usually found in a well arranged shop, forging in iron and steel, welding, tempering, tool dressing, etc. The object of the course is to give the student practice in working iron and steel in the forge. First or second year, shop practice, ten hours per week.

203. Machine Shop. Fall, Winter and Spring Terms.

Filing, chipping, the operation of engine lathes, shaper, drill press, etc., finishing, polishing and machine construction.

Shop practice, ten hours per week.

204. Carpentry and Building. Fall, Winter and Spring Terms.

The course embraces a variety of bench work, which brings into use all the tools commonly used in the trade. It is necessary that the student first obtain a knowledge of how to properly use his tools and how to care for same. Great care is taken that each student acquires a workmanlike use of the various tools, and that he understands how to keep them in fit condition for work.

Continuing in the course, the student is taught how to lay

out and construct centers and window frames; make, case and hang doors; lay beams and set bridging in same; erect and stud partitions and lay flooring. A complete course in joinery work is also given.

In addition to the work outlined the course includes house construction and framing. Although the lack of space prevents the erection of a frame house of full dimensions the same attention is devoted to all the details of construction as would be required in similar work on a larger scale. In work of this kind, the pupils obtain a knowledge of the erection of framing for a house; also of sheathing and shingling. The window frames, sashes, doors, etc., are all made and set in position by the young men.

Lectures imparting the scientific features of the trade are also given during the progress of the course.

Shop practice, ten hours per week.

205. Bricklaying and Plastering. Fall, Winter and Spring Terms.

In the bricklaying classes the young men are taught first how to handle the trowel and how to spread mortar.

The manual instruction in bricklaying includes the building of 8, 12, 16 and 20 inch straight walls; return corners and intersecting walls; piers, arches, fire places and flues, setting window frames, sills and lintels, blocking, toothing and corbelling. Fire-proof brickwork will also be included in the course. The manner of laying solid, hollow and annular slabs, and how fitted into beams, walls, floors and arches, will be taught.

The scientific instruction will be upon the properties of mortar and cement, and how they should be mixed. Arches: their various styles, and the advantages of each. Flues: their construction and utility. Foundations, walls, bonding, etc.

The course in plastering is arranged for beginners, as well as those who are working at the trade. To the apprentice, particularly, this course presents many advantages, as little or no opportunity is given in the trade at large to learn cornicing.

The course includes lathing, scratch and brown coat work, hard finishing and cornicing.

Shop practice, ten hours per week.

206. Cement Testing. **Spring Term.**

Laboratory tests of various kinds of cement to determine fineness, time of initial and permanent set, strength when subjected to various strains, etc., all with a view to finding out the general characteristics of the sample tested.

Laboratory, ten hours per week.

207. Plumbing and Steam Fitting. Fall, Winter and Spring Terms.

In the practical part of the course the students will be taught how to set and connect different kinds of radiators, and how to make the various kinds of coils in common use, such as return coils, miter coils, corner coils, etc. These coils are constructed in various sizes, three quarters to two inch pipe being used. Then follows instruction in piping of dwelling, and the buildings, and the various systems of heating, such as steam one pipe, steam two pipe, hot water, direct-indirect, and high and low pressure, are each erected in turn. The students are given a set of plans and on these plans are drawn the actual heating arrangement that would be required for a building of the kind represented. The measurement of each piece of pipe is taken from the plan, and the fittings, valves and other fixtures required to make a complete job are used in the construction of the work. In the workshop there is an arrangement of girders and beams to which the work is suspended, the pipes being run with a proper pitch the same as would be demanded in actual practice. On the completion of each job, connection is made with one of the steam lines of the school, and the work which has been erected receives a thorough test.

The scientific instruction consists of lectures on the principles of steam and hot water heating. The lectures will include the following subjects: Tools, fittings and pipe; general heating; low pressure steam, indirect steam heating; single pipe low pressure steam; hot water heating; high pressure steam heating steam power plant exhaust heating; power fan or blower system of steam heating and ventilating.

Shop practice, ten hours per week.

208. Practical Electricity. **Spring Term.**

The laboratory practice in this course will include:

Signal System

Wire splicing—soldering—bell and annunciator installation, fire and burglar alarms—telephone and telegraph circuits—automobile wiring.

Edison Three Wire System

Methods of obtaining the three wire system—wire calculation for the same—balancing a three wire system— effect of unbalancing.

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Interior Wiring

In this department the student is given practice in installing knob and tube wiring—iron conduit with condulet fittings—wood and metal moulding, together with the installation of receptacles, sockets, fixtures, etc. All work is done strictly in accordance with the rules of the National Board of Fire Underwriters.

Direct Current Apparatus

Connecting up shunt, series and compound machines, both generators and motors—speed control of motors—trouble locating. The student is required to connect up control apparatus, rheostats and dynamos in their proper relation, and put them in perfect operation.

Instrument Testing

Calibration of ammeters and voltmeters—wattmeter testing —connecting instruments on switch-board.

Alternating Current Machine

Connecting up one, two and three phase machines (both generators and motors) requirements for parallel operation—synchronizing A. C. generators and motors—connecting up control apparatus, rheostats and machines in their proper relation and putting same in perfect operation.

Transformer Connections

Delta and star connections—Scott transformation 2 to 3 phase or vice versa—quarter phase connection—auto transformer.

Electrical Appliances

Installation and operation of electric fans, toasters, stoves, signs, flashers, arc lamps and storage battery.

Laboratory, ten hours per week.

209. Foundry Work. **Winter Term.**

This course includes foundry practice work interspersed with lectures as occasion may demand. The practice work includes the making of green sand moulds, machine moulding, core making and core setting, charging the cupola and running the castings, all with special attention to the best modern practices.

Shop practice, ten hours per week.

210. Cabinet Making. **Fall, Winter and Spring Terms.**

An advanced course in woodwork using hard woods of all kinds. It gives particular attention to glued joints, finishing, varnishing, etc.

Shop practice, ten hours per week.

211. Heating. **Fall, Winter and Spring Terms.**

In the practical part of the course the students will be taught how to set and connect different kinds of radiators, and how to make the various kinds of coils in common use, such as return coils, miter coils, corner coils, etc. These coils are constructed in various sizes, three quarters to two inch pipe being used. Then following instruction in piping of dwelling, and the buildings, and the various systems of heating, such as steam one pipe, steam two pipe, hot water, direct-indirect, and high and low pressure, are each erected in turn. The students are given a set of plans and on these plans are drawn the actual heating arrangement that would be required for a building of the kind represented. The measurement of each piece of pipe is taken from the plan, and the fittings, valves and other fixtures required to make a complete job are used in the construction of the work.

Shop practice, ten hours per week.

212. Automobile Shop. **Fall, Winter and Spring Terms.**

The shop work in this course will require four hours each day and one full day each week. The following is a summary of the work covered in this course:

GASOLINE CARS IN GENERAL—ALL TYPES AND SIZES

How to rebuild and take up worn parts.
Compression.
Connecting rod bearings and main bearings.
Grinding and adjusting valves.
Valve timing.

CARBURETORS

Adjustment of all makes of carburetors.

TRANSMISSIONS

Rear Axles and all other parts of a chassis.

MAGNETOS

Different types of magnetos.
How to locate magneto trouble.
Charging magnetos.
How to build complete charging plants.
High tension magnetos.
Troubles and how to locate them.

INDUCTION COILS

Induction coils and their uses.

IGNITION SYSTEMS

Different ignition systems.
Operation of coils.
Broken down coils.
Burned out condensors.
Troubles and how to locate them.
How to time them and how to wire.

SELF STARTERS

Different starting systems.
Troubles and their remedies.

MOTOR PRACTICE AND REPAIR

Principles of two and four cycle gas engine from one cylinder to twelve cylinders.
Operation of motor including wiring.

Valve timing.
Timing and setting magnetos.
Wiring and setting magnetos.
Wiring and setting timers.
Adjusting vibrator coils.
Bearings.
Piston rings.
Transmissions and practice work in all kinds of repairs, adjustments, overhauling, rebuilding, etc.

VULCANIZING

Tube and casing work.
General tire work.

DRIVING

Including instruction in road rules, traffic regulations, handling various sizes, types of cars, etc.

BLACKSMITH AND FORGE WORK

Tool making.

LATHE WORK, MACHINE SHOP PRACTICE, USES OF DIFFERENT TYPES OF LATHES.

213. Steam and Gas Tractor Shop. Fall, Winter and Spring Terms.

The shop work in this course will require four hours each day and one full day each week. The following is a summary of the work covered in this course:

STEAM TRACTORS IN GENERAL

Putting in new flues.
Re-lining engine.
Bearings.
Valve setting.
Injectors, Cross head pumps, etc.
Governers.
Steam gages.

OIL AND GAS TRACTORS IN GENERAL—ALL TYPES AND SIZES

How to rebuild and take up worn parts.
Compression.

Connecting rod bearings and main bearings.
Grinding and adjusting valves.
Valve timing.

TRACTION ENGINEERING

The principles of traction engines.
Shop work including repairing, overhauling, rebuilding, ignition systems, transmissions.
General machine work.
Driving.

POWER FARMING

Handling of tractors on rough ground and smooth ground.
Handling tractors attached to gang plows, etc.
Best method of handling tractors under ordinary farm conditions to secure best results with small fuel consumption and least wear and tear on machine.
Actual plowing and field practice.
Repair work.
Note: When this course is taken in winter term only, the practice in handling of tractors will be limited.

SUB-PREPARATORY

In order to meet the requirements of a large number of students from the country schools, who have not completed the seventh or eighth grade, many of whom are out-classed in age and unwilling to attend the common schools, the following courses have been added to the schedule:

220. Arithmetic.
221. Grammar.
222. Geography.
223. History.
224. Reading.
225. Spelling.
226. Penmanship.

The work in the above courses is very thorough and given under competent instruction. It is based on the course of study as outlined for the common schools by the State Board of Education of North Dakota.

The Wahpeton Conservatory of Music

As there are frequent inquiries by students of the State School of Science for courses in music the announcement of the Wahpeton Conservatory of Music is given in this catalogue.

It is the aim of the conservatory to make of itself an educational institution, solely, and it expects to do the most thorough fundamental work possible, for without this, no student can ever attain any degree of virtuosity and musicianship. The courses of study in piano forte, voice culture, violin and theory embrace practically all of the standard musical literature of these branches.

Not all music students would become teachers or public performers, therefore students are enrolled under two general heads, **Regular**—those following the regular prescribed course, and **Special**—students whose studies are selected to suit their individual needs and aims. To each class the very best efforts regardless of age or advancement is given. Of all students, regularity, punctuality and earnestness are demanded.

FACULTY

MRS. NINA BARDWELL TORGUSON
Voice

MARGUERITE BAKER
Piano

MRS. EMMA BRAUN NELSON
Piano

OLAF HENRIKSON
Violin and Harmony

The teachers are selected because of their broad education and special fitness for their positions. Most of them have enjoyed years of study with the best American and European instructors and have been successful teachers in various American conservatories for some time.

SCHOOL YEAR

The conservatory year is thirty-six (36) weeks, and divided into three terms of twelve weeks each. Students may enroll at any time and continue for the unexpired portion of that term, paying only for the weeks of enrollment.

BRANCHES

The Conservatory now offers courses of instruction in the following branches:

Piano, voice culture, violin, cornet and band instruments, harmony, history of the development of music and of the lives of our greatest composers.

SCHOOL CLASSIFICATION

Students of every age are enrolled in the Preparatory Department where they remain until they have mastered the elements of notation and can play well grades 1-2-3-4 and have a good and sufficient muscular and musical foundation for the easier work of Bach, Hadyn, Mozart, Beethoven, Mendelssohn, Chopin and Schumann.

It is obvious that no time can be set for the completion of the above courses of study, because, whereas one pupil devotes four or five hours per day to practice and takes two or three lessons per week, another spends but three or four hours per week in study and takes but one weekly lesson. A student's former preparation, natural aptitude, earnestness, perseverance, etc., is taken into account.

LESSON PLANS

Piano, voice and violin instructions are given in private lessons. Theory and history of music are taught in small classes. Outlines of the complete courses of study for each branch, will be furnished upon application.

RECITALS AND CONCERTS

Students' Rehearsals, Recitals and Concerts will be given from time to time during the school year as occasion demands. Students of all grades participate in the Rehearsals, and only students may attend. The numbers for the recital programs will be selected from the material developed in the Rehearsals. Recitals are open to students and their friends. Open public concerts, in turn, will be given by the best performers who have appeared in the Rehearsals and Recitals. Thus by constant and gradual progression, students are prepared to appear at their best in public concerts. The public will be invited to hear these programs.

SOCIAL FUNCTIONS

The social life of school takes away the sting of hard, incessant labors and makes the life of the students away from home more bearable and pleasant. Occasionally the Conservatory faculty entertains its students and friends in an "Open House Recital". Short programs are given and the balance of the evening devoted to social festivities.

TUITION

Tuition rates range from $6.00 to $12.00 per term for one lesson per week, according to the instructor.

GENERAL INFORMATION

Tuition is payable in advance by the term. By special arrangement, however, it may be made payable by the half term in advance.

No students will be enrolled by the lesson, or for a shorter period than the unexpired portion of that term.

Lessons missed through the neglect of students will not be made up. Lessons missed through illness, if the teacher is notified in advance, will be made up during that term. Slight indisposition, visitors, extra home or social duties and bad memory are not satisfactory excuses for missing lessons.

All regular students are expected to attend the various rehearsals, recitals and concerts given by the school. All adult students are invited to join the History of Music classes. They are free.

For further information address the Director of the Conservatory, Wahpeton, N. D.

STUDENTS 1917-1918

Achter Sophia ..... Wahpeton
Adams, Ralph, ... Barney
Anderson, Hans W. ..... Wahpeton
Anderson, Myrtle ..... Wahpeton
Arntzen, Ina B. ..... Forman
Assad, Sykea ..... Wahpeton
Bagg, Florence ..... Mooreton
Barker, Raymond ..... Rock Lake
Barr, William ..... Rugby
Bassett, Ariel ..... Wahpeton
Bentzin, Hattie ..... Wahpeton
Berg, Amand L. ..... Walcott
Bergman, Lillian ..... Wahpeton
Berseth, Albert ..... Abercrombie
Berseth, Morris ..... Abercrombie
Boll, Ann K. ..... Wahpeton
Bolme, Carl ..... Christine
Bolme, Sophus ..... Enloe
Bolme, William ..... Enloe
Borseth, Oscar ..... Enloe
Bowman, Raymond ..... Wahpeton
Broen, Hannah ..... Wahpeton
Broen, Ruth ..... Wahpeton
Broen, William ..... Wahpeton
Bucher, George J. ..... Forman
Bush, Delia M. ..... Grafton
Bute, Earl ..... Doran, Minn.
Carter, Florence ..... Wahpeton
Connolly, Arthur ..... Wahpeton
Crandall, Mrs. Luella B. ..... Wahpeton
Crouch, Mrs. Edna J. ..... Carrolton, Mo.
Dahl, Celestial, M. ..... Wahpeton
Dahl, Manuel ..... Barton
Devlin, Hugh J. ..... Jamestown
Dill, Bert C. ..... Oakes
Donahue, Ellen M. ..... Breckenridge, Minn.
Doyen, Lena ..... Barlow
Early, Ethel ..... Wahpeton
Eder, Mabel ..... Breckenridge, Minn.
Elznic, Benjamin ..... Lidgerwood
Elznic, Charles ..... Lidgerwood
Erickson, Hannah ..... Walcott
Escher, Lola ..... Wahpeton

Forman, Alta ..... Wahpeton
Gajer, Irvin A. ..... Fairmount
Gardnier, Esther E. ..... Mandan
Gebhart, Benedict ..... Wahpeton
Gelinske, Gertrude M. ..... Cayuga
George, Robert A. ..... Milnor
Gilles, Frank ..... Wahpeton
Goldberg, Emma ..... Veblen, S. D.
Hager, Leona G. ..... Barney
Hanson, Josephine ..... Wahpeton
Hanson, Valborg ..... Mayville
Harker, Beatrice ..... Rugby
Harker, Lillian ..... Rugby
Hausken, Clyde ..... Wahpeton
Hektner, Clara ..... Mooreton
Hendrickson, Elmer H. ..... Colfax
Henry, Marie ..... De Lamere
Herman, Adolph ..... Veblen, S. D.
Hess, Frank ..... Wahpeton
Holthusen, Walter ..... Wahpeton
Hulett, Fred A. ..... Pretty Rock
Hunkins, George Jr. ..... Breckenridge, Minn.
Johnsgaard, Sanford N. ..... Christine
Johnson, Arthur ..... Wahpeton
Johnson, Clifford ..... Wahpeton
Johnson, Lurline ..... Wahpeton
Johnson, Victor ..... Wahpeton
Johnson, Walter ..... Wahpeton
Jones, Margaret E. ..... Breckenridge, Minn.
Jourdain, Susan ..... Red Lake, Minn.
Juven, Josephine ..... Wyndmere
Kaiser, Lawrence ..... White Rock, S. D.
Kolesky, Martha A. ..... Minneapolis, Minn.
Korsh, Louis ..... Breckenridge, Minn.
Kraker, Sophia, ... Wahpeton
Kruse, Louis C. ..... Barney
Kubela, Henry J. ..... Wahpeton
Kueber, Mary ..... Petersburg
Larson, Claymon ..... Aurelia
Lima, Ruth ..... Hannaford
Lindquist, George F. ..... Turtle Lake
Lockman, Arthur L. ..... Kent, Minn.
Loder, Albert ..... Kensal
Lokken, Archie ..... Maxbass

Losee, Mabel	Wolford
Luick, Homer C.	Wahpeton
Lutovsky, Frank	Veseleyville
Mallinger, Ransom W.	Lidgerwood
McCarty, Catherine	Wahpeton
McNamee, William	Starkweather
Meyer, Katherine	Hankinson
Michels, Lidvina	Wahpeton
Mikkelson, Harold	Wahpeton
Miklethun, Leonard	Wimbledon
Mishak, Ernest	Kent, Minn.
Mitskog, Fritjof	Walcott
Mittendorf, Alfred	Wahpeton
Moen, Edward	Colfax
Moulton, Maynard	Wahpeton
Moulton, Stephen	Wahpeton
Mumm, Emil	Lidgerwood
Mumm, Leonard	Lidgerwood
Murphy, Mary	Wahpeton
Murphy William F.	Foxhome, Minn.
Murray, Catherine M.	Wahpeton
Myhran, Gus	Barton
Myhran, Oscar	Barton
Nelson, Amy	Fairmount
Nelson, Carl	Milnor
Nelson, Clarence E.	Harvey
Nelson, Regina	Havana
Nelson, Vernon	Aurelia
Ness, Conrad C.	Wahpeton
Nolan, Fay M.	Wahpeton
Novatny, Sevina	Breckenridge, Minn.
Nyberg, Agnes	Wahpeton
Oien, Martha	Wahpeton
Olson, Clarence E.	Dwight
Olson, Pearl J.	Wahpeton
Oslie, Ben O.	Christine
Osman, Leo D.	Wahpeton
Parizek, James	Lidgerwood
Patterson, Bernice	Wahpeton
Paul, Clara	St. Johns
Peet, Donald	Wolverton, Minn.
Peterson, Clarence E.	Mooreton
Peterson, Edgar	Walcott
Polda, Edward	Wyndmere

Restan, Gertrude N. ..... Sisseton, S. D.
Rice, Dewey M. ..... Hankinson
Rieland, Bernice ..... Kent, Minn.
Rieland, Sylvan ..... Kent, Minn.
Rischard, LeRoy J. ..... Wahpeton
Rischard, Loretta ..... Wahpeton
Rittenhouse, Jean ..... Wahpeton
Roy, Johnson ..... White Earth, Minn.
Sand, Math, Jr. ..... White Rock, S. D.
Schmidt, Richard ..... Enloe
Schmitt, John M. ..... Wahpeton
Schmitt, Joseph C. ..... Wahpeton
Shea, Helen C. ..... Wahpeton
Shirley, Alma ..... Breckenridge, Minn.
Sittarich, Joseph ..... Wahpeton
Skaarvold, Inga ..... Christine
Skovholt, John ..... Dwight
Skovholt, Oscar ..... Dwight
Solberg, Chris ..... Milnor
Soule, Reinhart ..... Dwight
Spelhaug, Clara ..... Homestead
Stajgr, Emily ..... Wyndmere
Stajgr, Rose ..... Wyndmere
Stanley, Helen Mae ..... Milnor
Stein, Arthur J. ..... Wahpeton
Streib, Elmer F. ..... New Salem
Strong, Francis ..... Milnor
Sundberg, Edith M. ..... Wahpeton
Sundberg, Everett ..... Wahpeton
Sundell, J. Dawson ..... Dwight
Thomas, Helene ..... Wahpeton
Thompson, Annie J. ..... Walcott
Tibbits, Elden ..... Morris, Minn.
Timke, Clyde H. ..... Breckenridge, Minn.
Tobiason, Esther D. ..... Archer, Mont.
Trittin, Fred ..... Great Bend
Trittin, Irene ..... Great Bend
Ulsaker, Emma ..... Kindred
Van Arnum, Grace ..... Wahpeton
Voss, Marie A. ..... Campbell, Minn.
Walter, Hazel ..... Fairmount
Walton, Alice ..... Wahpeton
Wanek, Albert ..... Wahpeton
Wang, Inga ..... Hankinson

Wang, Tillie M. ..... Hankinson
Warnecke, Clara ..... Breckenridge, Minn.
Warnecke, Genevieve ..... Breckenridge, Minn.
Welharticky, Edward ..... Breckenridge, Minn.
Wiltil, Harold ..... Milnor
Wold, Olaf J. ..... Walcott
Wright, Donald ..... Wahpeton
Wyvell, Irene ..... Breckenridge, Minn.
Zitka, Frank W. ..... Breckenridge, Minn.

SUMMER SCHOOL STUDENTS 1917

Akerson, Florence ..... Rosholt, S. D.
Anderson, Jennie ..... Underwood, Minn.
Anderson, Josie ..... Belgrade, Minn.
Anderson, Ranvie ..... Colfax
Askerooth, Florence ..... Battle Lake, Minn.
Askerooth, Mae ..... Battle Lake, Minn.
Bader, Crescentia ..... Wahpeton
Bassette, Alice M. ..... Pine Island, Minn.
Bassette, Millie C. ..... Pine Island, Minn.
Bennett, Anna ..... Wahpeton
Bowers, Sarah ..... Fairmount
Bowman, Esther M. ..... Wahpeton
Bratseth, Myrtle ..... Wahpeton
Chernich, Angeline ..... Mooreton
Chezik, Jessie ..... Wahpeton
Conder, Lulu ..... Abercrombie
Dolbear, Adda ..... West DePere, Wis.
Dyste, Clara ..... Breckenridge, Minn.
Eckes, Marion ..... Lidgerwood
Edwards, Claire ..... Milnor
Foster, Irene ..... Milnor
Garberg, Ellen G. ..... Underwood, Minn.
Goldberg, Emma ..... Walcott
Grover, Susan ..... Amboy, Minn.
Hamerlik, Christine ..... Wahpeton
Harles, Anna ..... Wahpeton
Hektner, Adina ..... Mooreton
Hermanslie, Louise ..... Abercrombie
Hermanslie, Olga ..... Abercrombie
Hermo, Alma ..... Colfax
Hess, Elinor ..... Wahpeton
Hess, Helen ..... Wahpeton

Hinck, Ida ..... Great Bend
Holt, Martha ..... Fergus Falls, Minn.
Hom, Eva ..... Milnor
Hom, Mollie ..... Milnor
Jacobs, Emily H. ..... Milnor
Johnsgaard, Esther ..... Christine
Johnson, Hazel ..... Gwinner
Johnson, Helen ..... Wahpeton
Kallestad, Ella ..... Dwight
Kane, Margaret ..... Breckenridge, Minn.
Keech, Edna ..... Milnor
Knudson, Allie ..... Rosholt, S. D.
Kryger, Lola ..... Wolverton, Minn.
Lanning, LeRoy ..... Milnor
Longfellow, Helen ..... Monticello, Minn.
Mangskau, Agnes ..... Breckenridge, Minn.
Marvin, Gertrude ..... Hankinson
Mathieson, Minnie ..... Dwight
Mead, Grace ..... Fairmount
Minnehan, Loretta ..... Fairmount
Morse, Millicent ..... Granite Falls, Minn.
Myhre, Olga ..... Flaming, Minn.
Nelson, Ethel ..... Fairmount
Nelson, Lillian ..... Fairmount
Nelson, Sarah ..... Fairmount
Noah, Grace ..... St. Paul, Minn.
Novatny, Edna ..... Breckenridge, Minn.
Nypen, Alma ..... Abercrombie
O'Brien, Margaret ..... Fairmount
Oslie, Mathilda ..... Christine
Overboe, Hannah ..... Wahpeton
Petersen, Anna ..... Doran, Minn.
Polifka, LaVanche ..... Tenney, Minn.
Prentice, Ethel ..... Cogswell
Reckert, LeMae ..... Breckenridge, Minn.
Reinke, Helen ..... Great Bend
Reinke, Mildred ..... Great Bend
Reistad, Dagny ..... Walcott
Ripperton, Helen ..... Foxhome, Minn.
Russell, Minnie ..... Cogswell
Sampson, Hazel ..... Wyndmere
Sampson, Mabel ..... Wyndmere
Saumweber, Lucy ..... Lidgerwood
Schaefer, Gertrude ..... Breckenridge, Minn.

Schroeder, Mrs. Myrtle ..... Fairmount
Schutt, Pearl M. ..... Fairmount
Sherman, Helen ..... Campbell, Minn.
Stevenson, Gertrude M. ..... Fairmount
Stevenson, Mrs. Mae E. ..... Fairmount
Stibal, Lena ..... Lidgerwood
Tiedemanson, Cornelia ..... Fergus Falls, Minn.
Tronsgaard, Evelyn ..... Wyndmere
Tronsgaard, Ragna ..... Wyndmere
Voelker, Pauline ..... Wahpeton
Walter, Ruth J. ..... Fairmount
Wick, Ella J. ..... Underwood, Minn.
Wright, Florence ..... Wahpeton

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